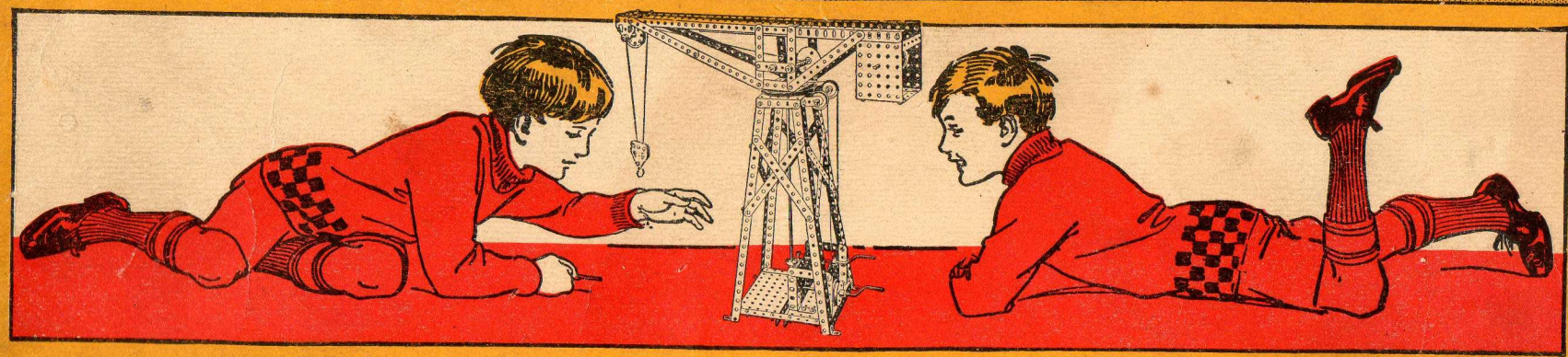


MECCANO

(TRADE MARK REG. U.S. PAT. OFF.)

THE TOY THAT MADE ENGINEERING FAMOUS

INSTRUCTIONS

FOR OUTFITS

0 to [illegible]

Price 50 Cents

MECCANO INSTRUCTIONS ARE PRINTED IN 16 LANGUAGES

MECCANO COMPANY
INCORPORATED
ELIZABETH, NEW JERSEY

AMERICAN EDITION

O—0628/50

VERY IMPORTANT!

CHANGES IN THIS MANUAL

The new 1929 Meccano Outfits, including many new and better parts and equipped to build many more models than ever before, necessitate changes and additions to this Instruction Manual.

You are advised, therefore, to disregard the old classification of models with Outfits as shown by the notation at the top of each model page. Instead, the following grouping of models should be used.

No. 0. Meccano Outfit builds Models 00.1 to 00.473.

No. 10. Meccano Outfit builds Models 00.1 to 1.266. (excepting "X" Models.)

No. 20. Meccano Outfit builds Models 00.1 to 1.267. (including "X" Models.)

No. 5. Spec. Meccano Outfit builds Models 00.1 to 00.496.

No. 30. Meccano Outfit builds Models 00.1 to 2.60.

No. 40. Meccano Outfit builds Models 00.1 to 3.52.

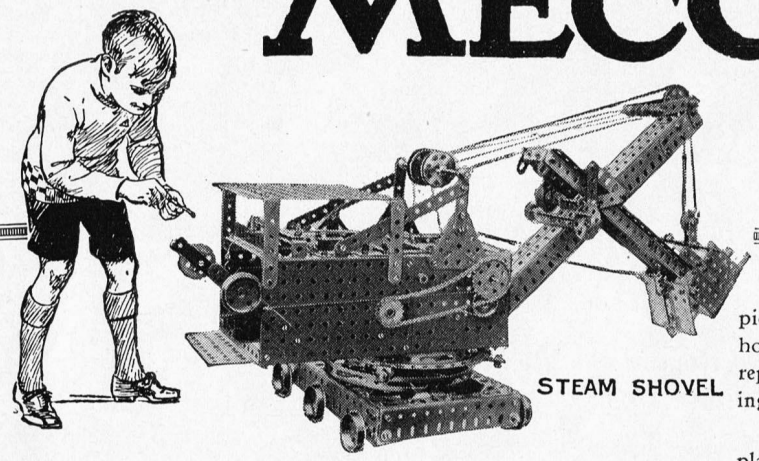
No. 50. Meccano Outfit builds Models 00.1 to 4.58.

No. 60. Meccano Outfit builds Models 00.1 to 5.43.

No. 70. Meccano Outfit builds Models 00.1 to 6.47.

MECCANO

THE TOY THAT MADE ENGINEERING FAMOUS



STEAM SHOVEL

Meccano was invented more than 30 years ago by Frank Hornby, the great pioneer in constructional toys. The idea was a big one, but even he didn't know how big it was destined to become. *He had discovered the only way* to build reproductions of all engineering and mechanical wonders in a true engineering way.

For every one boy who plays with any other constructional toy, over 1,000 play with Meccano. Altogether many millions of boys are playing with Meccano while you are reading this, and they speak all languages and live in every clime and country.

This Instruction Manual you are reading now is published for no less than 20 different countries, and in each case is printed in the particular language that is spoken in these countries. In addition to the English language, there are Manuals for the Argentine, Spain, France, Belgium, Luxemburg, Switzerland, Germany, Holland, Norway, Sweden, Denmark, Italy, Brazil, Portugal, and last but not least, China.

If a copy in any of these languages interests you, send 50 cents along to us and you shall have it. Over 250 tons of paper are required every year to print one edition only and if one year's edition of Manuals was placed end to end they would extend for 125 miles; placed one on top of the other they would form a gigantic pile over 2 miles in height—over 14 times as high as the Woolworth Building.

If in Doubt Write to Meccano Company, Inc.

We invite you to make full use of the Meccano service. When you want to know something more about engineering than is now shown in our books, when you strike a tough problem of any kind, write to us. We receive from boys over 200 letters every day all the year round. Some write to us because they are in difficulty, others because they want advice on their work or pleasures, or about their choice of a career. Others, again, write to us just because they like to—and we are glad to know that they regard us as their friends.

Although all kinds of queries are put up to us on all manner of subjects, the main interest is, of course, engineering. On this subject we claim to be supreme, and no one has such a wonderful knowledge of engineering matters as is possessed by our staff of experts. This vast store of knowledge gained only by many years of hard-earned experience, is at your service. Our experts will help you all they can, and be glad to do it!

The Meccano boy of today will be the famous engineer of tomorrow. There never was a time when there were so many opportunities for clever engineers, and never until now have boys had this marvelous opportunity of learning engineering secrets so quickly.

Front Cover of Meccano Manual in Chinese

How to Begin

Make the simple models first—there's loads of fun in them—and then try your hand at improving them. Every model can be made in a dozen different ways, and you may be the lucky one and discover a thirteenth! Screw up all the nuts and bolts tightly to ensure that your models will be strong and firm when they are completed.

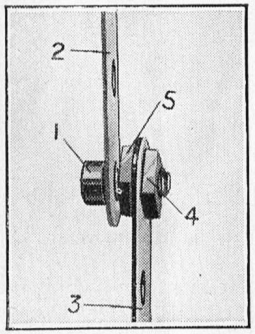
All the models shown in this Manual are numbered and for reference purposes the first page of this Manual indicates the models which may be built with each outfit.

Meccano Standard Mechanisms

There are a number of Meccano movements that have to a certain extent become standardized, that is to say they may be applied to more than one model, in most cases without any alteration, but in some few instances with only slight alterations to the original movement. These have been collected and classified, and may be obtained in the form of a Manual entitled "Meccano Standard Mechanisms." It will be observed that many of these Standard Mechanisms are referred to in the instructions for building the more intricate models in this book.

You may obtain a copy of the "Standard Mechanism Manual" from your dealer, price 50 cents, or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, New Jersey, price 50 cents postpaid.

Simple Meccano Pivots



S. M. 262

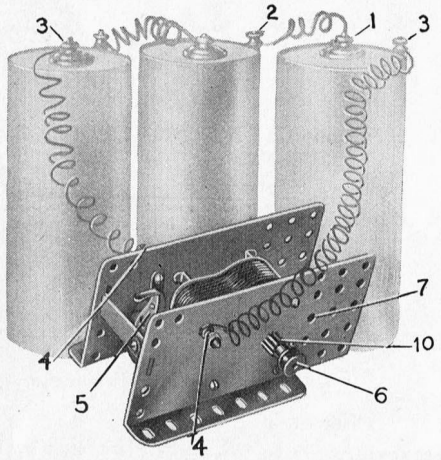
In building Meccano models it is frequently required to attach two parts together so that one or both are quite free to swivel. A simple way to do this is shown under detail number 262 in the Meccano Standard Mechanisms Manual, and for the benefit of those readers who are unable to consult the special Manual, we have reproduced this detail below. As will be seen, it consists of a simple type of pivot or swivel bearing formed by a bolt and two nuts. The bolt is secured rigidly to a Strip or Plate, etc., by means of the nuts, which are screwed tightly against opposite sides of the Strip, sufficient space being left beneath the head of the bolt to permit another Strip to turn freely about its shank.

A somewhat similar form of swivel-joint, also widely used, consists of a bolt and lock-nuts (S.M. 263). The two Strips to be connected pivotally are placed on the bolt and held in position by two nuts locked together on the shank. The Strips must be allowed a certain amount of play so that they can pivot independently about the bolt. These pivoting devices will be found equally valuable in the simplest and the most elaborate models.

How to Use the Meccano Electric Motor

This is the correct Electric Motor for all model builders. Not only has it got forward and reverse movements, but the sides and flanges form a perfect gear box. You thus dispense with a clumsy separate gear box, with its loss of power, and you get over 100 gear combinations on the motor itself; and with the Meccano precision gears you can increase or decrease your speed in a big variety of ratios. It has the standardized holes in the sides and flanges, and it fits perfectly into all models.

It has been specially designed for running Meccano Models and may be operated efficiently



by good dry cells or a storage battery giving approximately 4 volts. If two or three dry cells are used, they should be connected together as illustrated above, the central or positive terminal (1) of the first being connected to the outside or negative terminal (2) of the next, etc. The two remaining terminals (3) should be connected to the motor terminals (4). The connecting of the second motor terminal to the battery sets the one-way motor in motion. Insulated copper bell wire is recommended for making the connections and can be obtained at any electrical supply store.

The reversing motor has a control lever (5). When this lever is in the central position, as illustrated, the current is off and the motor is "dead. To start the motor move the lever to the right or left according to the motion desired, either forward or reverse.

A little light oil should be applied occasionally to the bearings of the motor.

The Meccano Transformer

When alternating electric current of 110 volts, 60 cycles is available it can be used to operate the motor through a Meccano transformer. This transformer is well made and is very efficient; it delivers just the right voltage for Meccano Motors.

Attaching the Motor to Meccano Model

The sides and flanged base of the motor are pierced with the Meccano standardized holes, so it is a simple matter to build the motor right into the model. The illustration shows the motor attached to Model No. 122—Drop Stamp. The motor is bolted to the Flanged Plate and a cord is run around the motor Pulley (6) and the Pulley Wheel (8) on the Crank Handle.

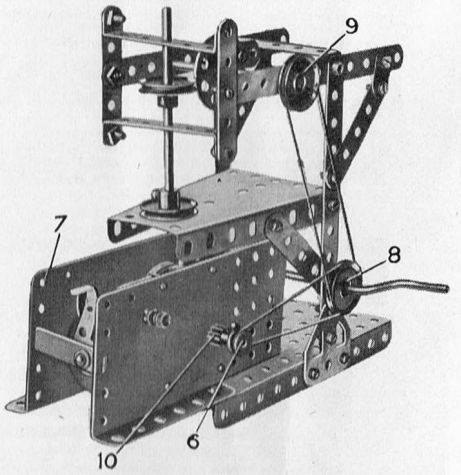
Thus the model can be operated either by hand or by motor, as desired. The Crank Handle and Pulley (8) could also be removed and the motor fixed directly under the table. The cord could then be connected from the motor Pulley (6) to the Pulley (9) on the upper arm of the model. This would make a more compact and neater model.

When connecting the cord between two Pulleys do not make it too tight nor too loose—a little experimenting will be necessary to get the proper tension. Meccano Spring Cord (part No. 58) is ideal for use with pulleys as it automatically adjusts itself to the proper tension. It can be purchased separately at any time.

Be sure that the model operates freely before attempting to drive it with the motor.

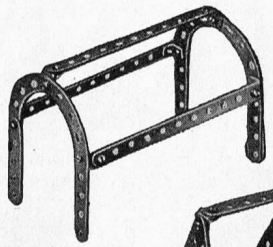
Gears for Meccano Motors

To the driving shaft of the motor is secured a pinion (10) which is used when a positive shaft drive is required instead of a belt drive. A 57-toothed Gear Wheel (Meccano part No. 27a), secured to a Rod passed through hole 7, will mesh with the Pinion on the driving shaft, and this Gear Wheel will rotate much slower than the Pinion be-

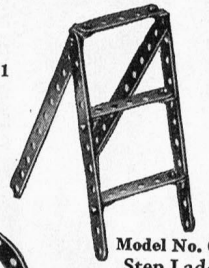


cause it is a great deal larger. However, although the speed of the second shaft is only about 1/5th the speed of the first shaft, it has about five times the power.

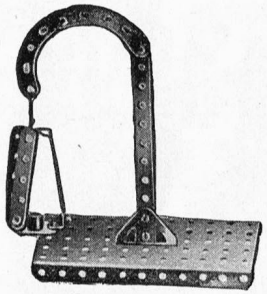
This is known as gear reduction and the procedure may be repeated by using a Meccano Pinion on the other end of the rod which goes through hole 7. This Pinion can be made to mesh with a Gear Wheel in the model.



Model No. 00.1
Viaduct

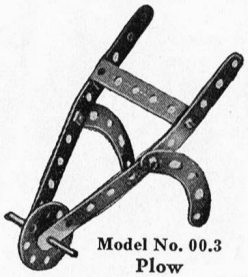


Model No. 00.7
Step Ladder

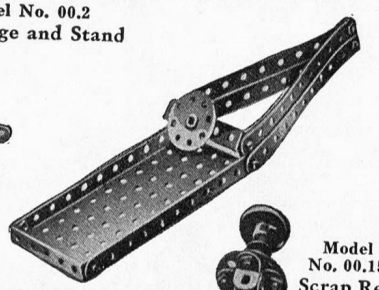


Model No. 00.2
Bird Cage and Stand

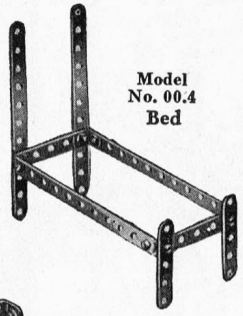
Model No. 00.8
Piano Stool



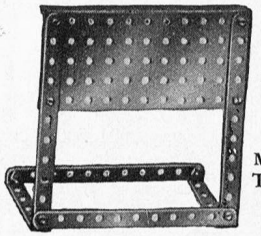
Model No. 00.3
Plow



Model No. 00.9
Motor Boat

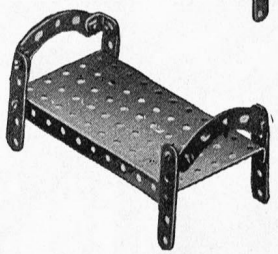


Model
No. 00.4
Bed



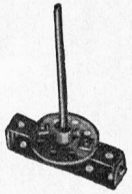
Model No. 00.5
Target Stand

Model No. 00.6
Top



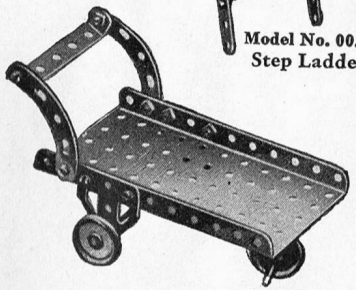
Model
No. 00.10
Crib

Model No. 00.17
Gravel Sifter

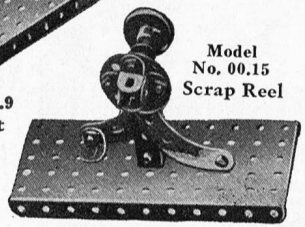


Model No. 00.11
Farm Sight

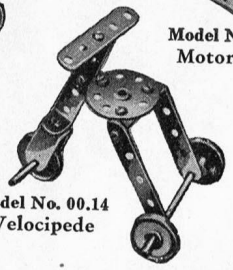
Model
No. 00.12
Auger



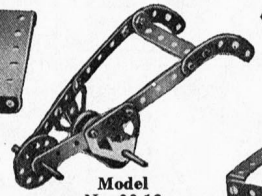
Model No. 00.13
Hand Cart



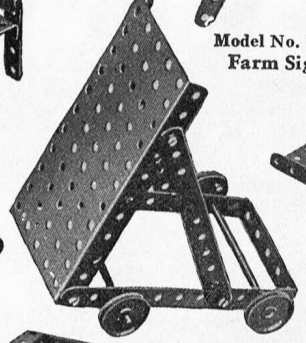
Model
No. 00.15
Scrap Reel

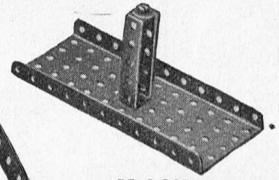


Model No. 00.14
Velocipede

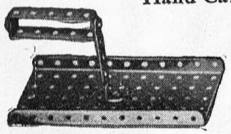


Model
No. 00.16
Harrow



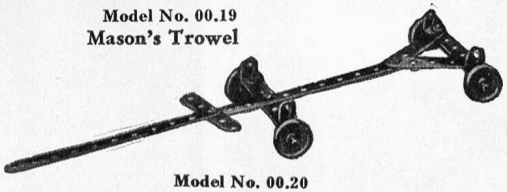


Model No. 00.18
Plasterer's Hawk

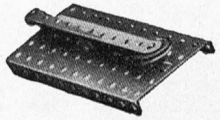


Model No. 00.19
Mason's Trowel

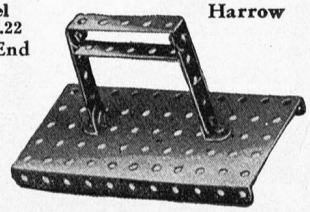
Model
No. 00.22
Book End



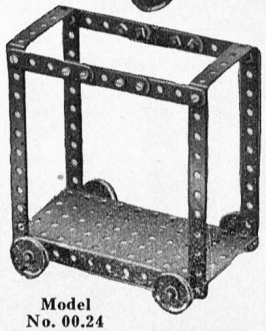
Model No. 00.20
Timber Wagon



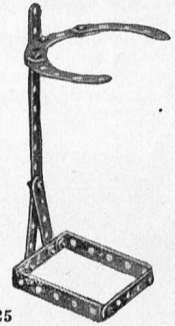
Model No. 00.21
Telegraph Key



Model No. 00.23
Cement Marker



Model
No. 00.24
Tray



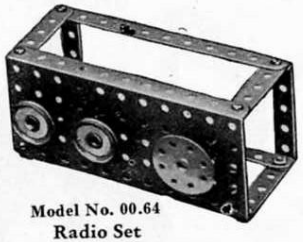
Model
No. 00.25
Umbrella Stand

These Models can be made with MECCANO Outfit No. 00.

A B C D E F G H I J K L M N O P Q R S

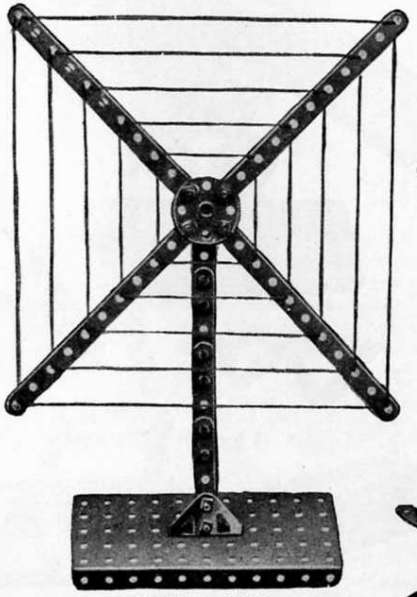
T U V W X Y Z ! ♥ 1 2 3 4 5 6 7 8 9

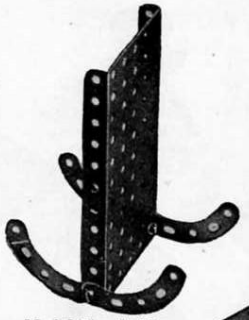
Model
No. 00.63
Bench



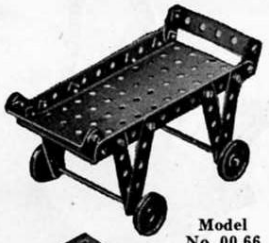
Model No. 00.64
Radio Set

Model
Nos. 00.26 to 00.62

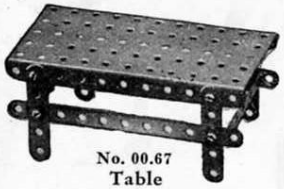




Model No. 00.65
Rocking Sign



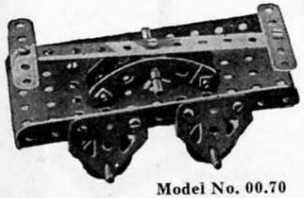
Model
No. 00.66
Tea Wagon



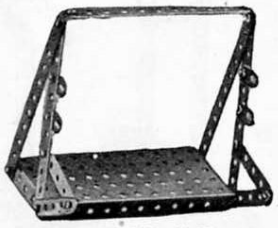
No. 00.67
Table

Model No. 00.68
Headphones

Model
Model No. 00.69
Drag Shovel



Model No. 00.70
Hand Car

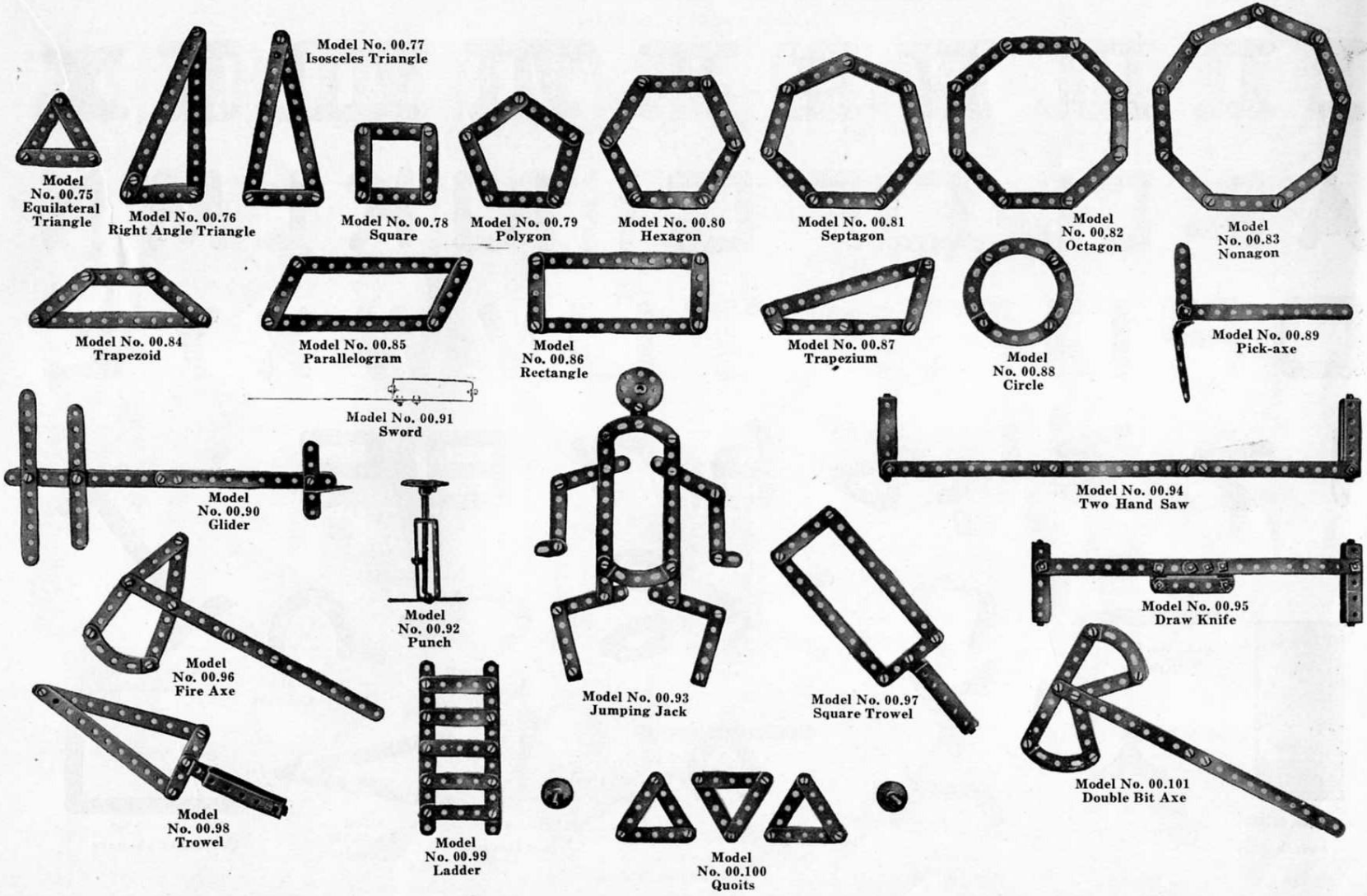


Model No. 00.71
Pen Holder

Model No. 00.72
Indoor Aerial

Model No. 00.73
Ceiling Fan

Model No. 00.74
Desk



Model No. 00.75 Equilateral Triangle

Model No. 00.76 Right Angle Triangle

Model No. 00.77 Isosceles Triangle

Model No. 00.78 Square

Model No. 00.79 Polygon

Model No. 00.80 Hexagon

Model No. 00.81 Septagon

Model No. 00.82 Octagon

Model No. 00.83 Nonagon

Model No. 00.84 Trapezoid

Model No. 00.85 Parallelogram

Model No. 00.86 Rectangle

Model No. 00.87 Trapezium

Model No. 00.88 Circle

Model No. 00.89 Pick-axe

Model No. 00.91 Sword

Model No. 00.90 Glider

Model No. 00.92 Punch

Model No. 00.93 Jumping Jack

Model No. 00.94 Two Hand Saw

Model No. 00.95 Draw Knife

Model No. 00.96 Fire Axe

Model No. 00.97 Square Trowel

Model No. 00.98 Trowel

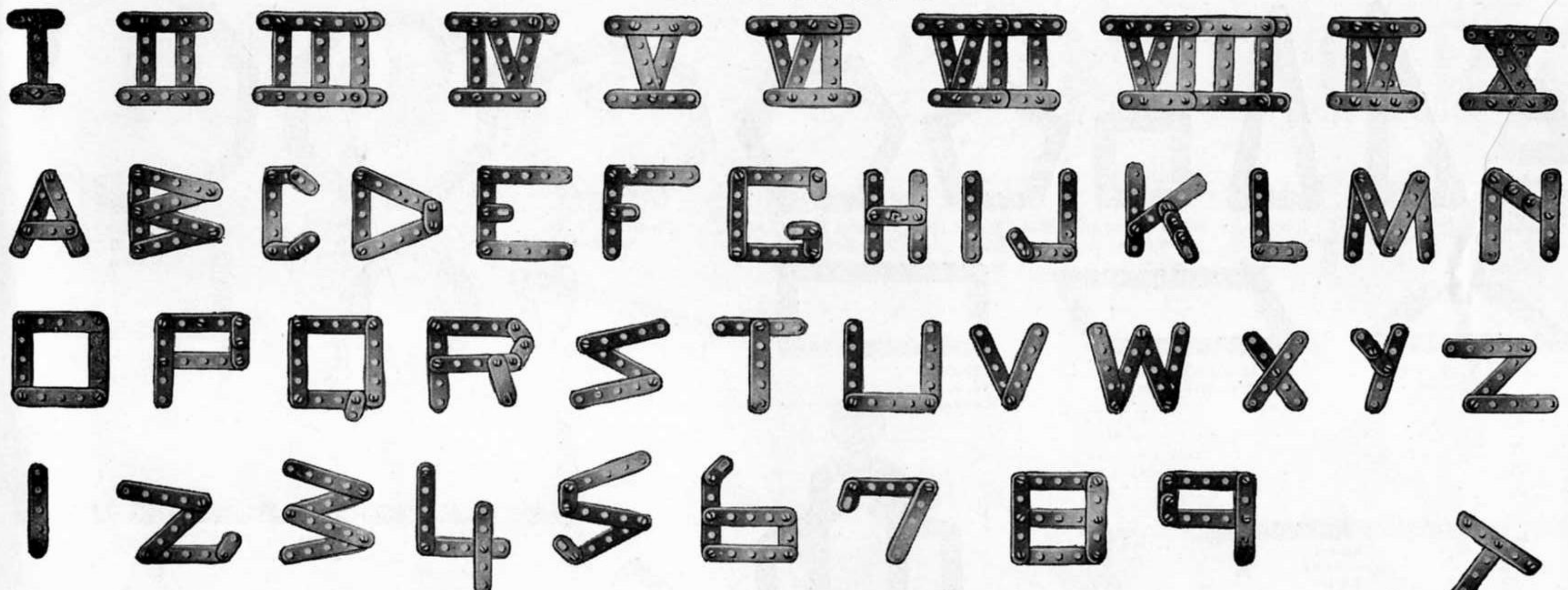
Model No. 00.99 Ladder

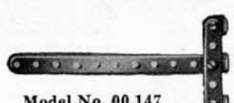
Model No. 00.100 Quoits

Model No. 00.101 Double Bit Axe

These Models can be made with MECCANO Outfit No. 00.

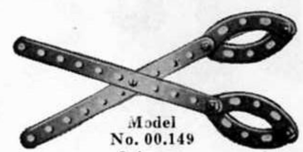
Model Nos. 00.102 to 00.146





Model No. 00.147
Rake

Model No. 00.148
Horse Collar



Model No. 00.149
Scissors

Model No. 00.150
Snowshoe

Model No. 00.151
Outside Calipers

Model No. 00.152
Track Gauge

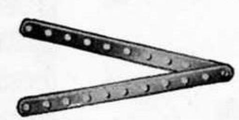
Model No. 00.153
Switch

Model No. 00.154
Inside Calipers

Model No. 00.155
Post Holder

Model No. 00.156
Lumber Hook

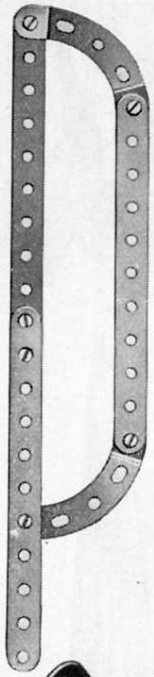
Model No. 00.157
Surface Gauge



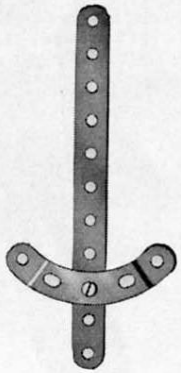
Model No. 00.158
Divider

Model No. 00.159
Carpenter's Square

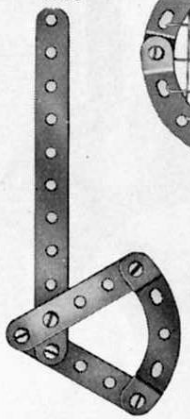
Model No. 00.160 Meat Saw



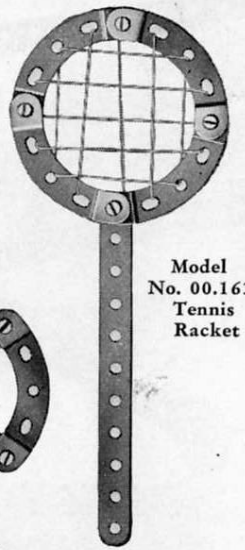
Model No. 00.161 Sword



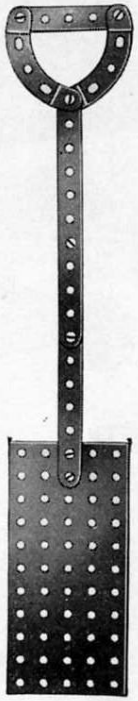
Model No. 00.162 Axe



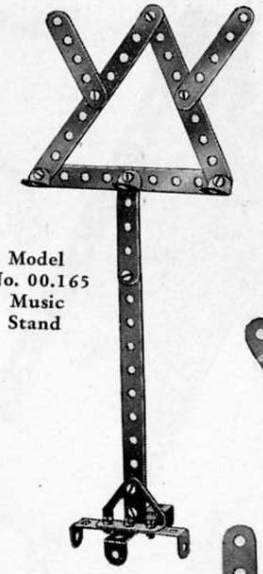
Model No. 00.163 Tennis Racket



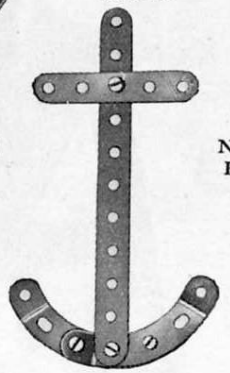
Model No. 00.164 Spade



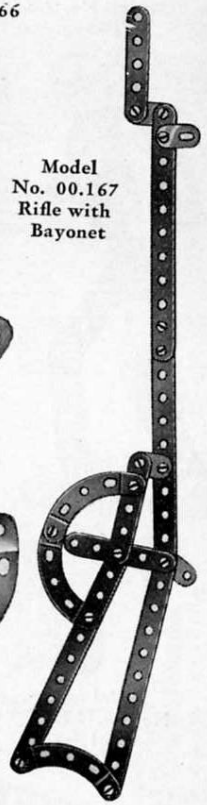
Model No. 00.165 Music Stand



Model No. 00.166 Anchor



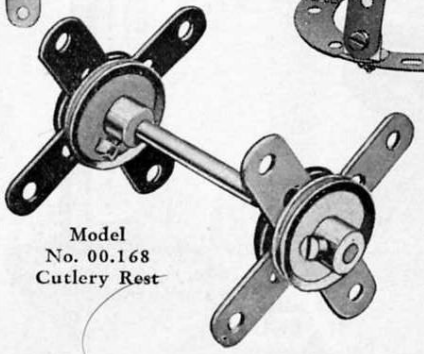
Model No. 00.167 Rifle with Bayonet



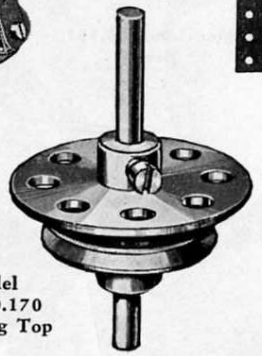
Model No. 00.169 Candle Shade

Model No. 00.173 Fork

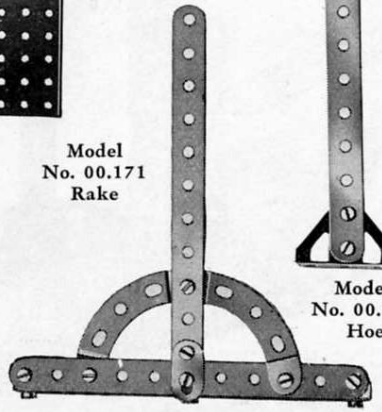
Model No. 00.168 Cutlery Rest



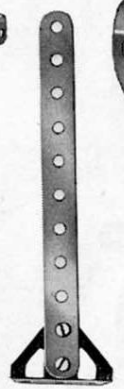
Model No. 00.170 Spinning Top



Model No. 00.171 Rake



Model No. 00.172 Hoe

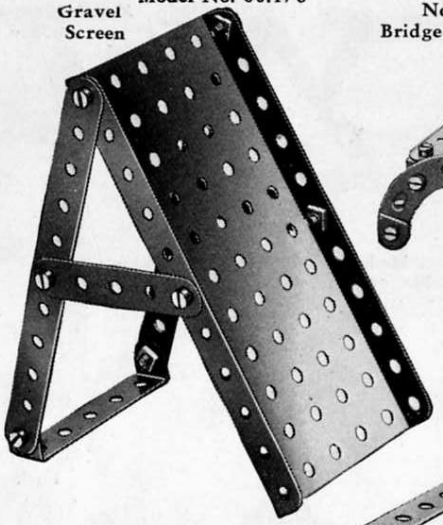


Model No. 00.174 Hanger Coat

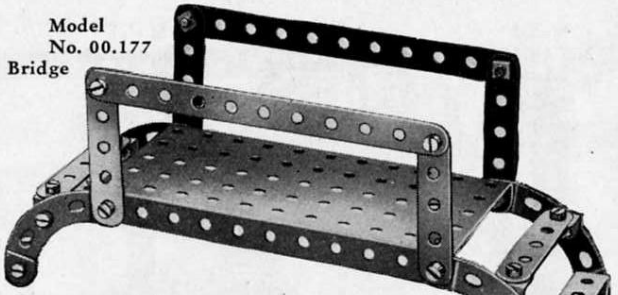
These Models can be made with MECCANO Outfit No. 00.

Model No. 00.175
Walking Man

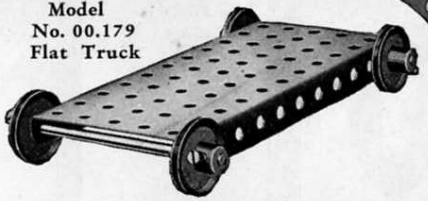
Model No. 00.176
Gravel Screen



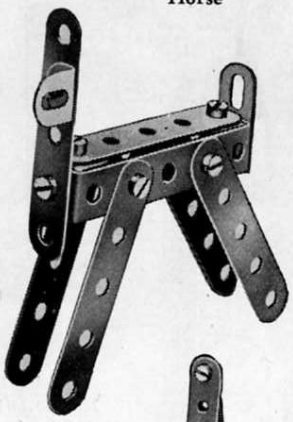
Model
No. 00.177
Bridge



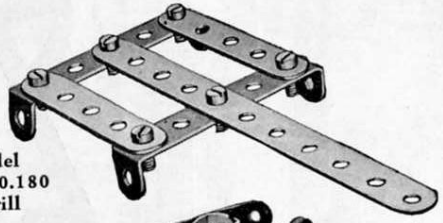
Model
No. 00.179
Flat Truck



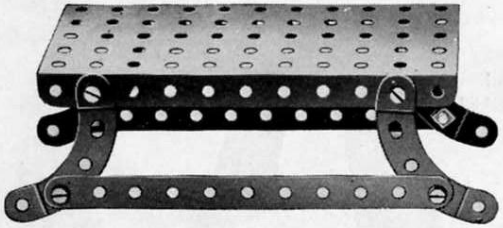
Model No. 00.178
Horse



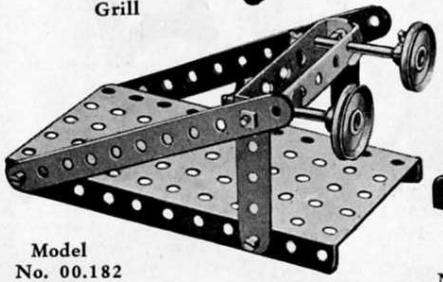
Model
No. 00.180
Grill



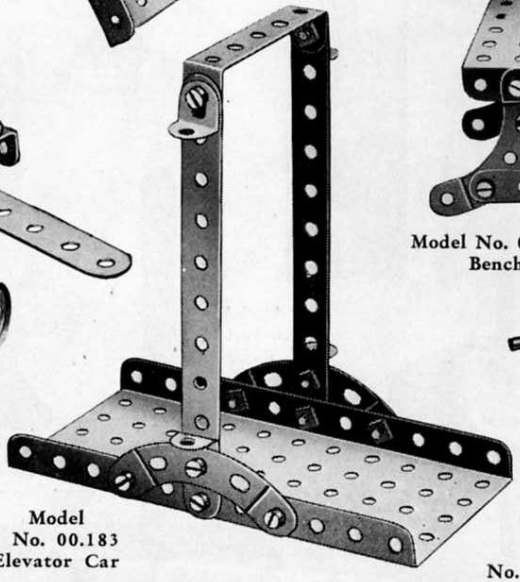
Model No. 00.181
Bench



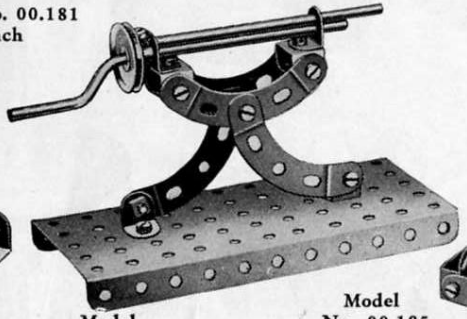
Model
No. 00.182
Buffers



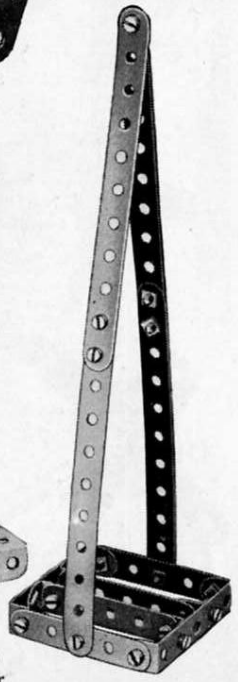
Model
No. 00.183
Elevator Car



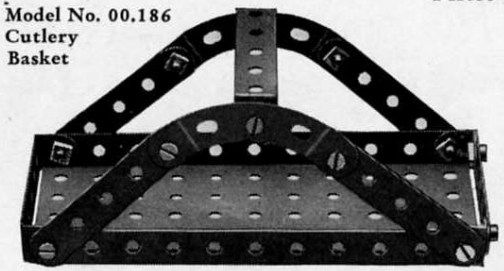
Model
No.00.184—Machine Gun



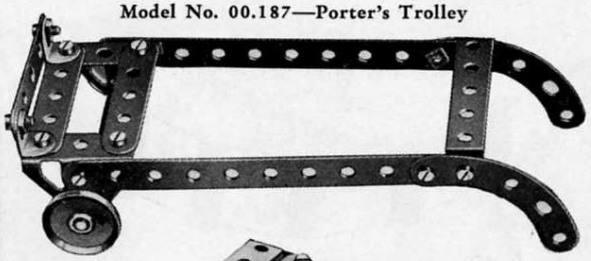
Model
No. 00.185
Potato Chopper



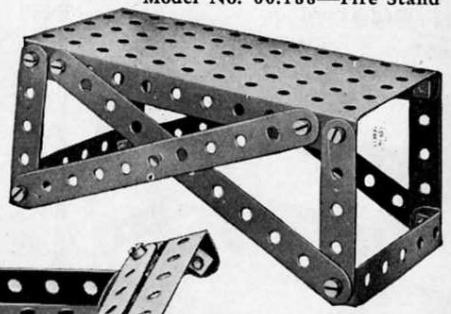
Model No. 00.186
Cutlery
Basket

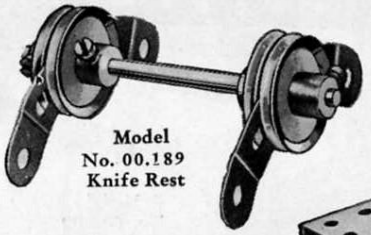


Model No. 00.187—Porter's Trolley

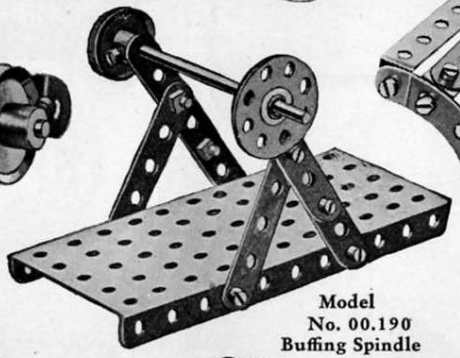


Model No. 00.188—Fire Stand

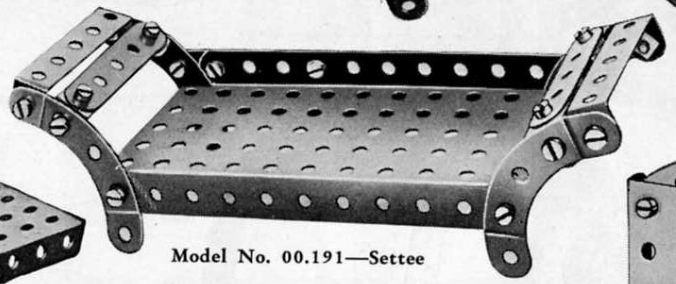




Model
No. 00.189
Knife Rest

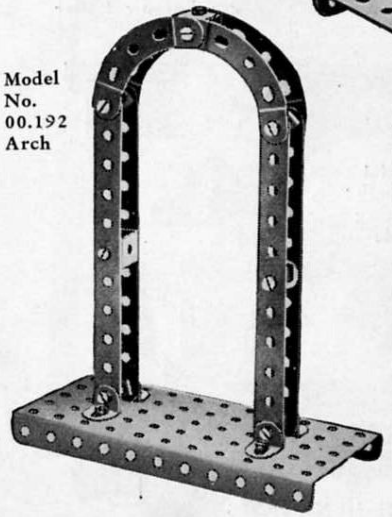


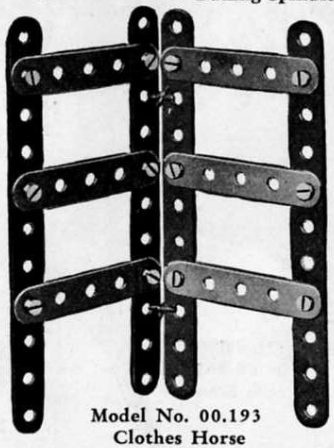
Model
No. 00.190
Buffing Spindle



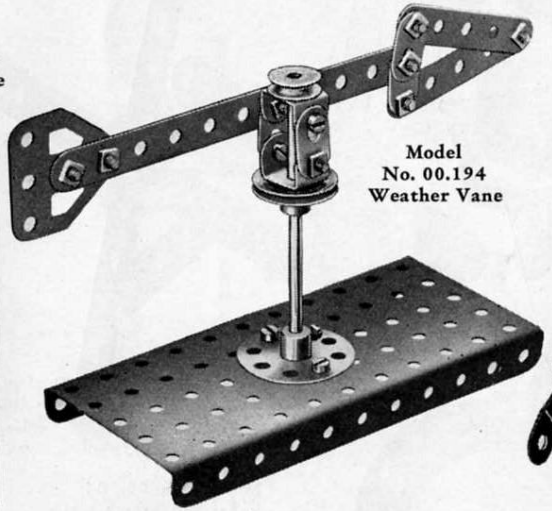
Model No. 00.191—Settee

Model
No.
00.192
Arch

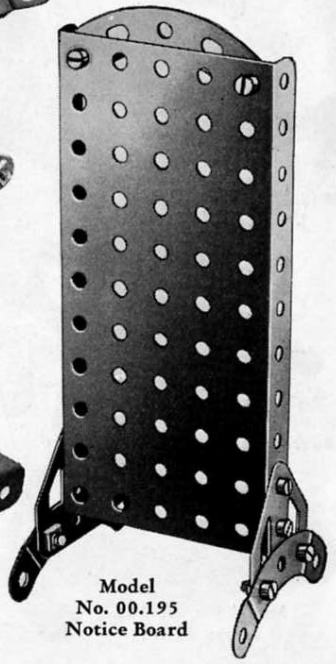




Model No. 00.193
Clothes Horse



Model
No. 00.194
Weather Vane

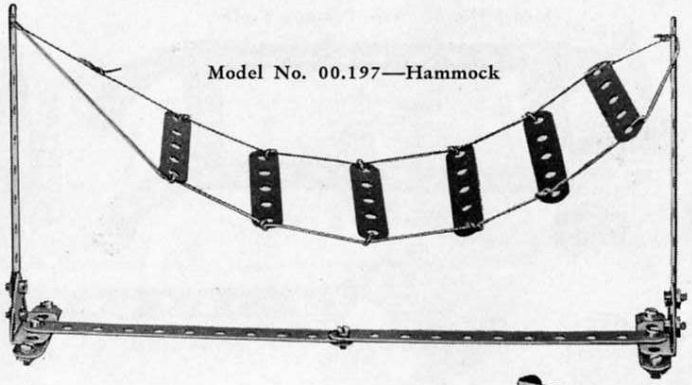


Model
No. 00.195
Notice Board

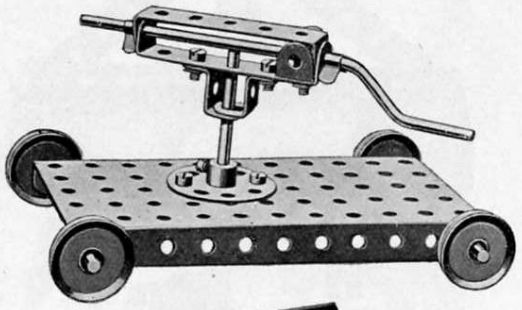
These Models can be made with MECCANO Outfit No. 00.

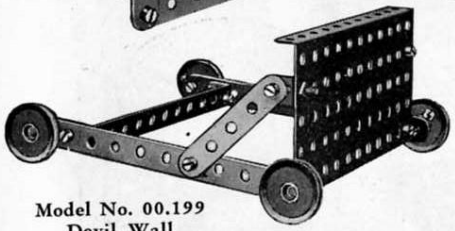
Model No. 00.196
Dog Kennel

Model No. 00.197—Hammock

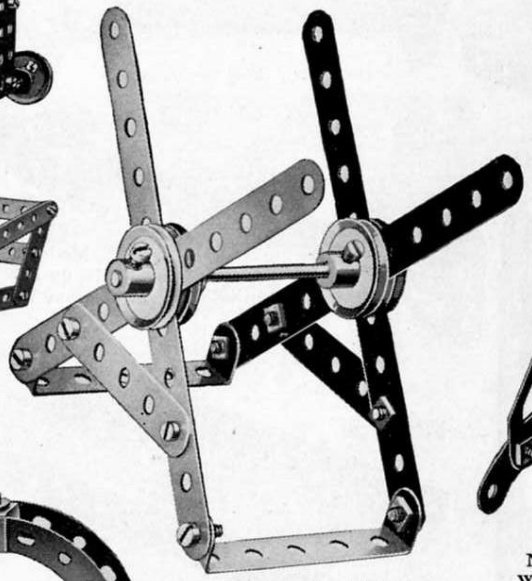


Model No. 00.198—Rock Drill

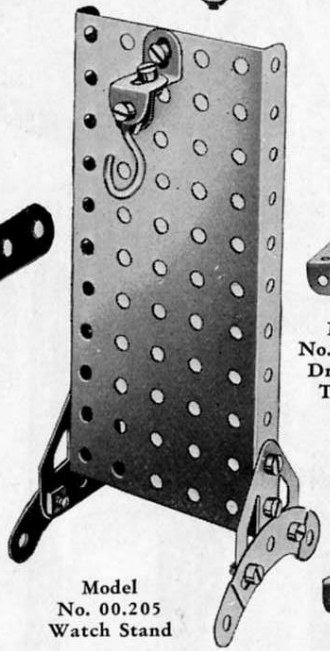




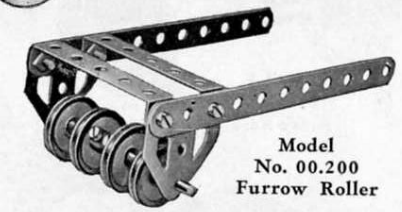
Model No. 00.199
Devil Wall



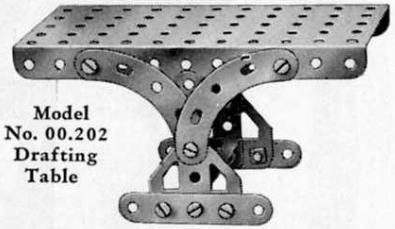
Model No. 00.204
Sawing Horse



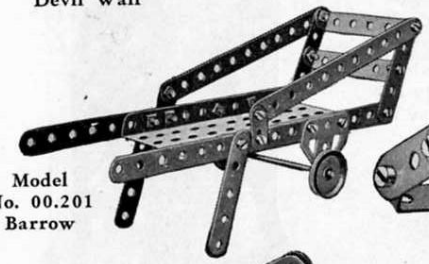
Model
No. 00.205
Watch Stand



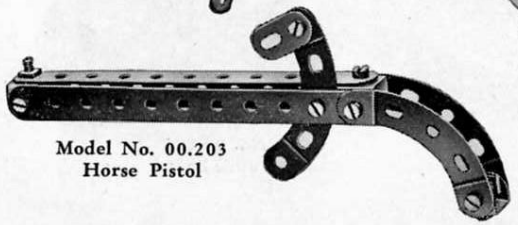
Model
No. 00.200
Furrow Roller



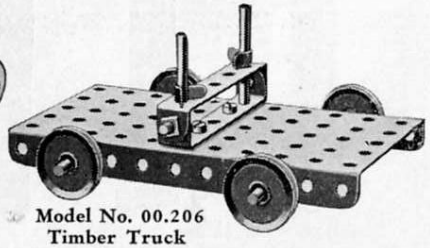
Model
No. 00.202
Drafting
Table



Model
No. 00.201
Barrow

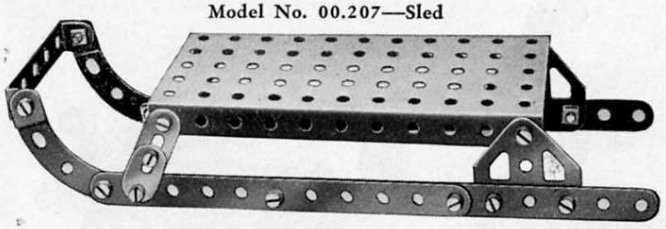


Model No. 00.203
Horse Pistol

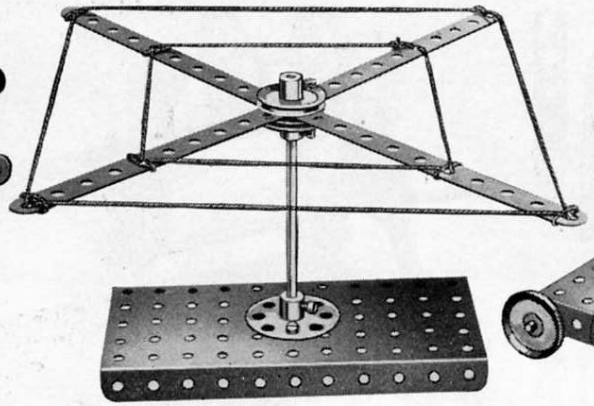


Model No. 00.206
Timber Truck

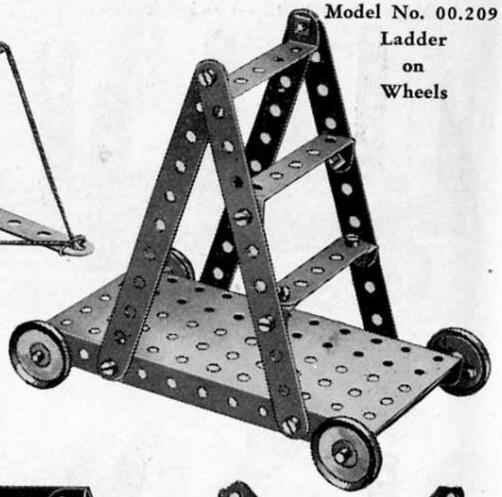
Model No. 00.207—Sled



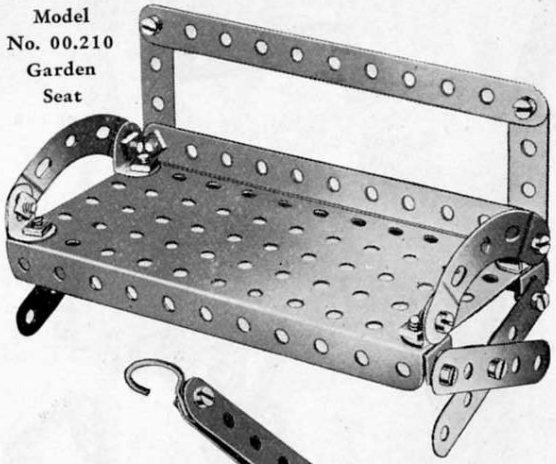
Model No. 00.208—Clothes Hanger

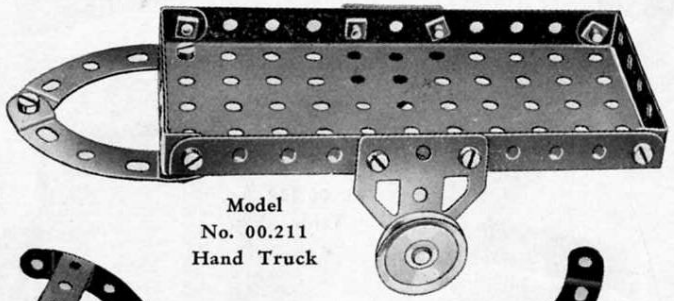


Model No. 00.209
Ladder
on
Wheels

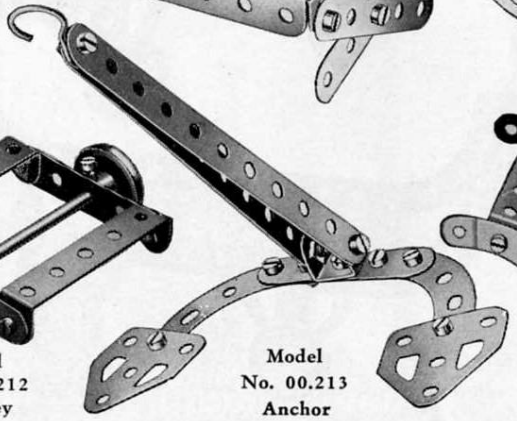


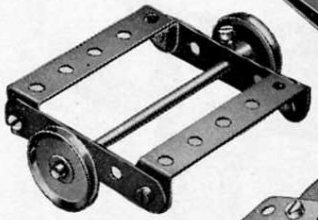
Model
No. 00.210
Garden
Seat





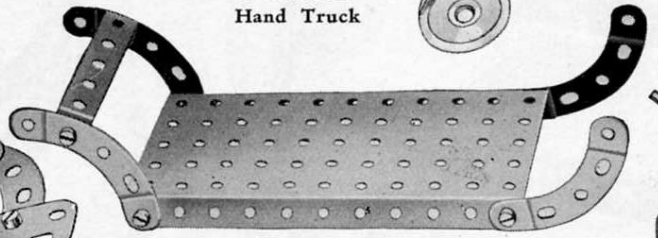
Model
No. 00.211
Hand Truck



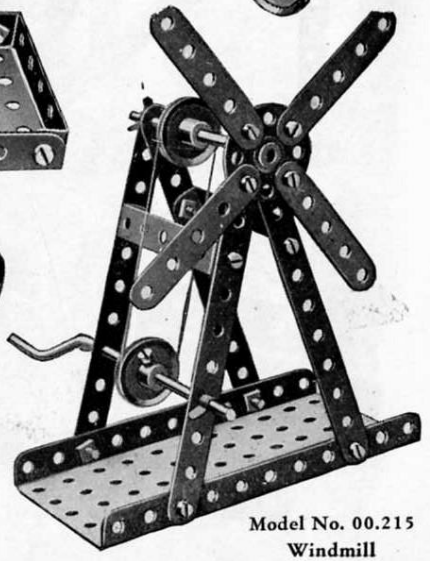


Model
No. 00.212
Trolley

Model
No. 00.213
Anchor



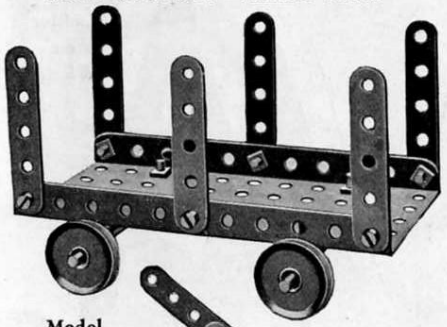
Model No. 00.214—Sled



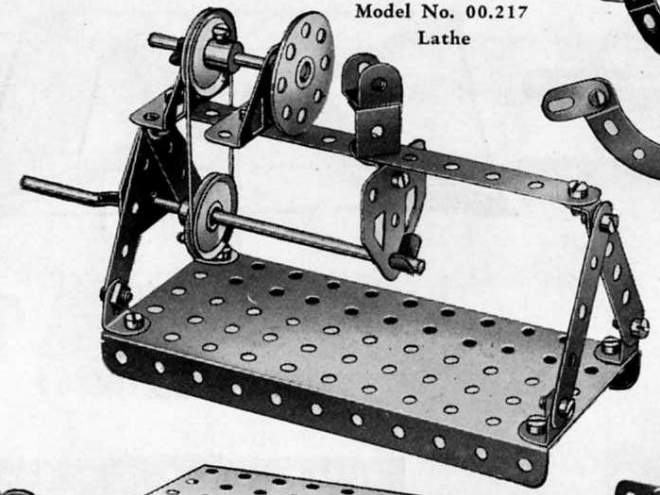
Model No. 00.215
Windmill

These Models can be made with MECCANO Outfit No. 00.

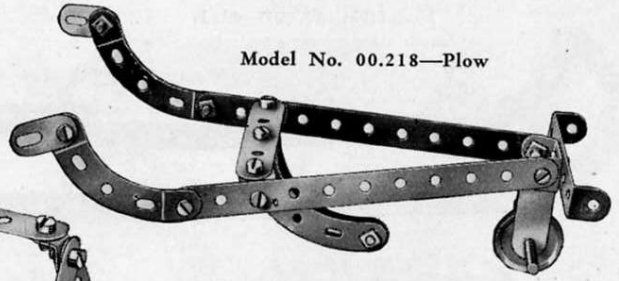
Model No. 00.216—Lumber Truck



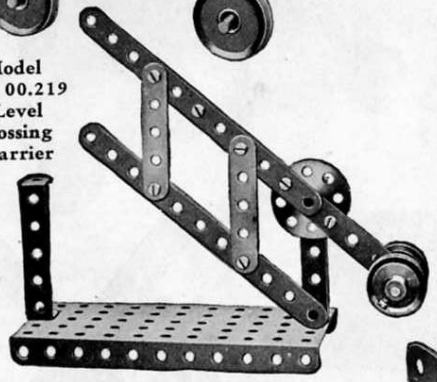
Model No. 00.217
Lathe



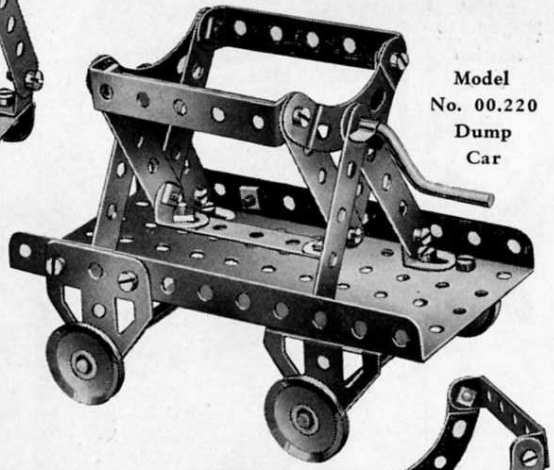
Model No. 00.218—Plow



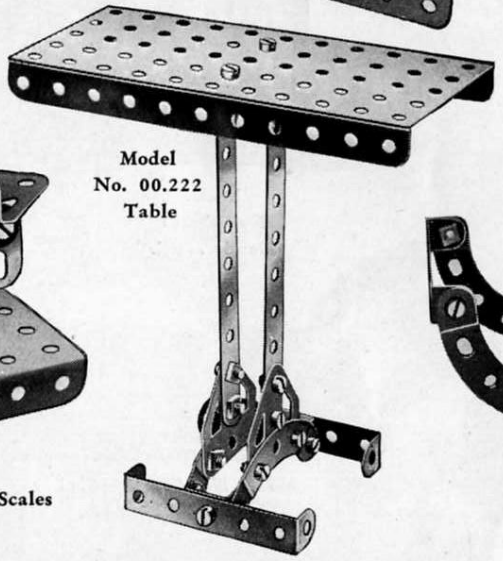
Model
No. 00.219
Level
Crossing
Barrier

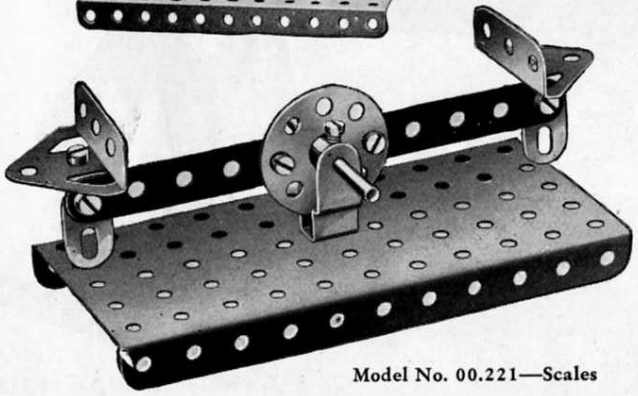


Model
No. 00.220
Dump
Car

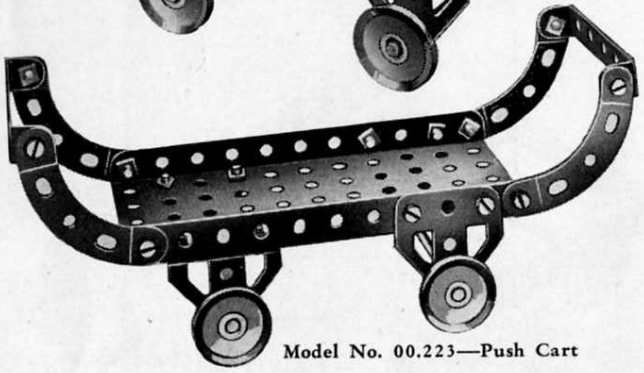


Model
No. 00.222
Table

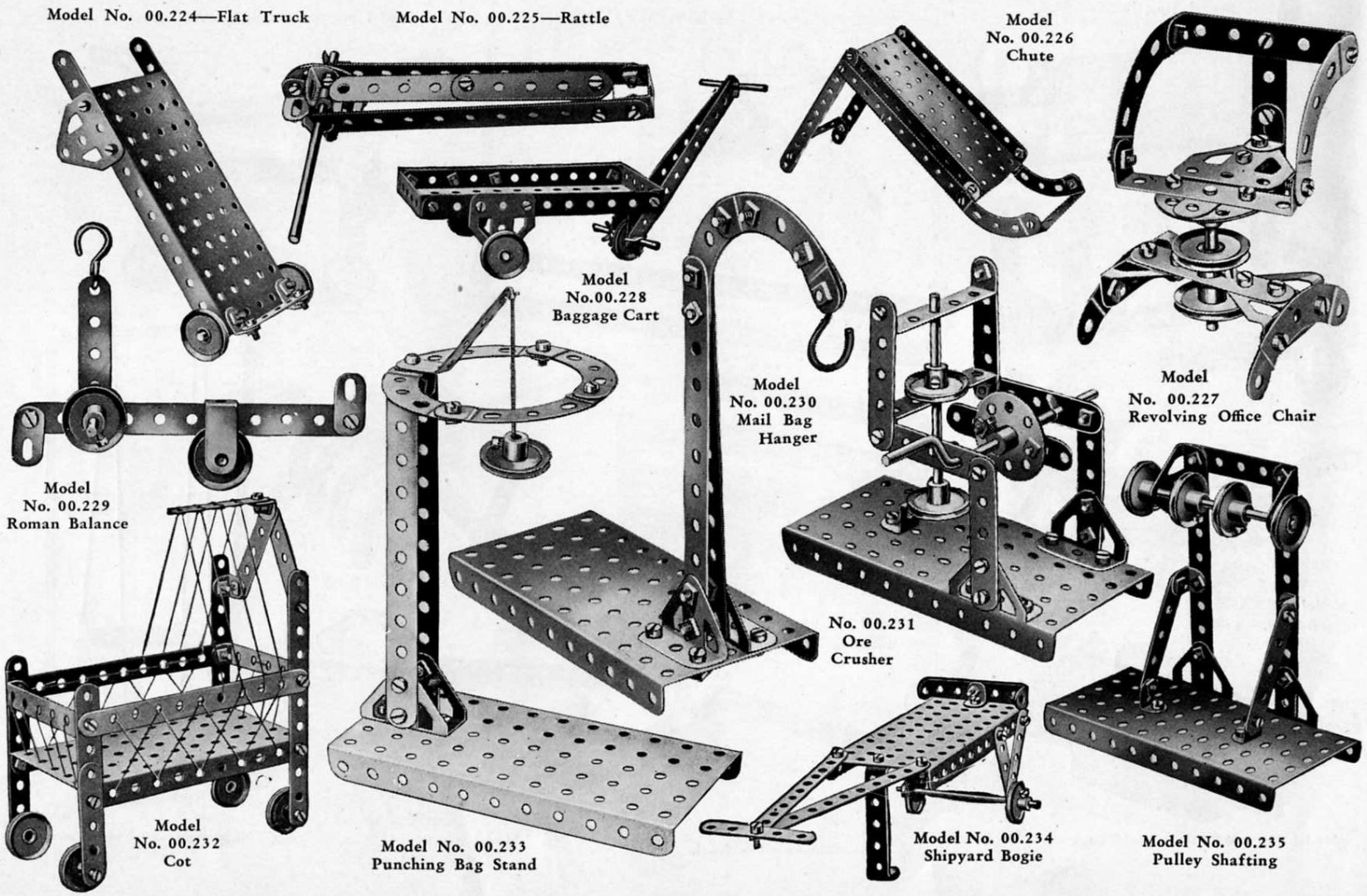




Model No. 00.221—Scales

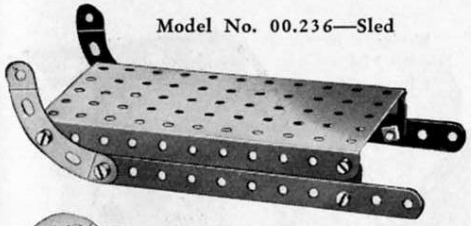


Model No. 00.223—Push Cart

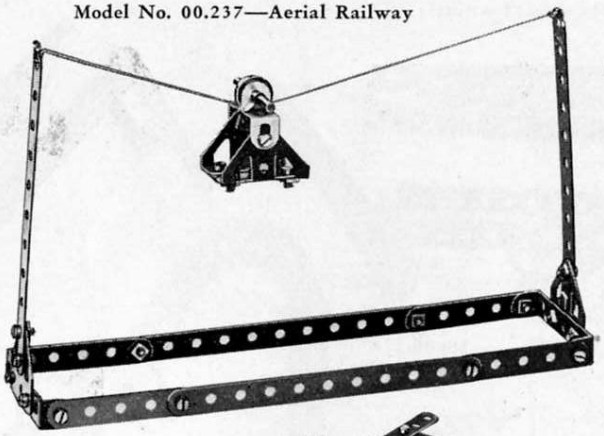


These Models can be made with MECCANO Outfit No. 00.

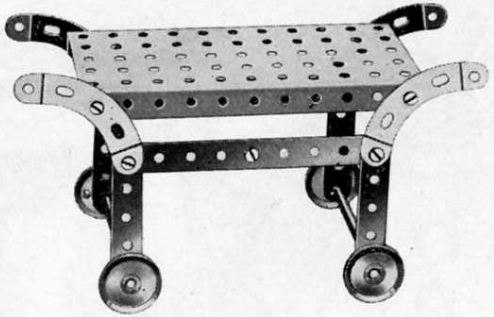
Model No. 00.236—Sled



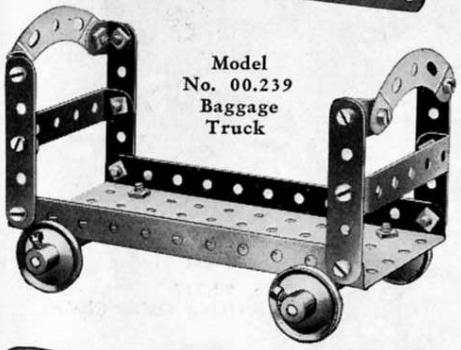
Model No. 00.237—Aerial Railway

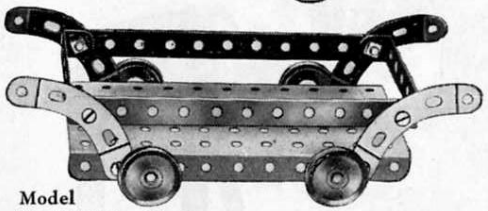


Model No. 00.238—Tea Wagon

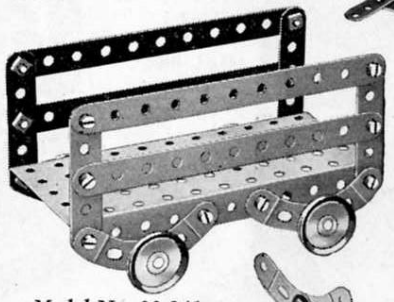


Model No. 00.239 Baggage Truck

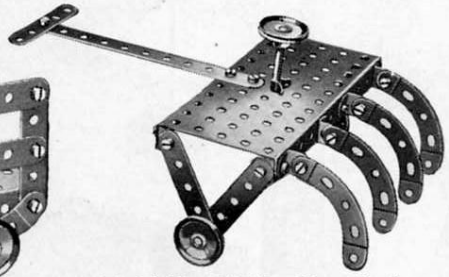




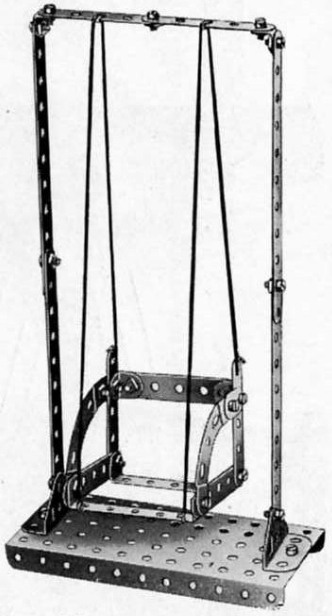
Model No. 00.240—Trolley



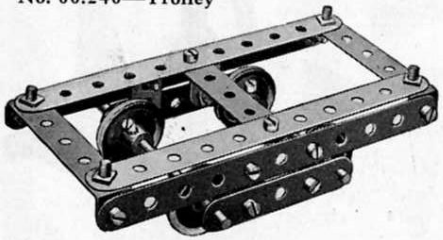
Model No. 00.241 Baggage Truck



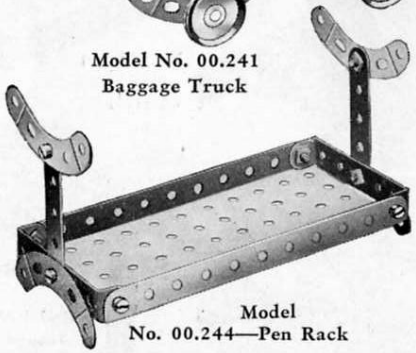
Model No. 00.242—Horse Rack



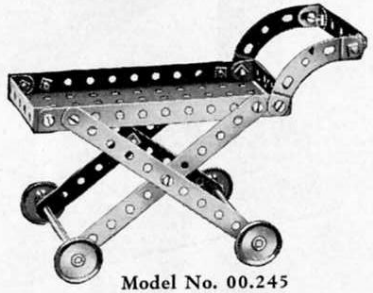
Model No. 00.246—Swing



Model No. 00.243—Bogie Truck

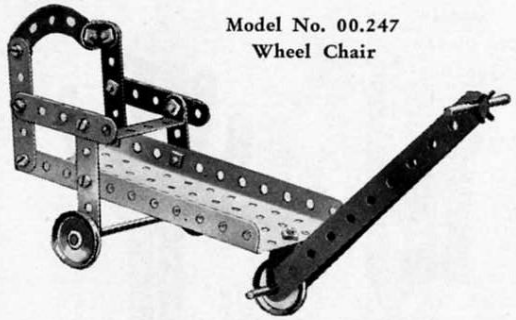


Model No. 00.244—Pen Rack



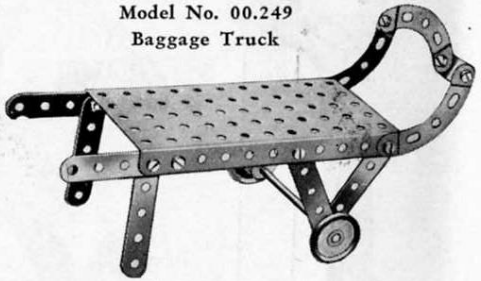
Model No. 00.245 Tea Wagon

Model No. 00.247
Wheel Chair

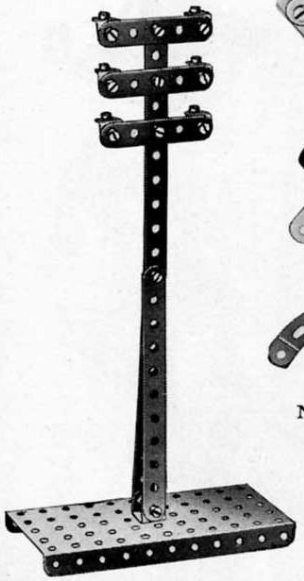


Model No. 00.248—Scales

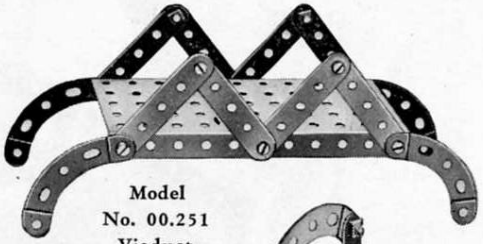
Model No. 00.249
Baggage Truck



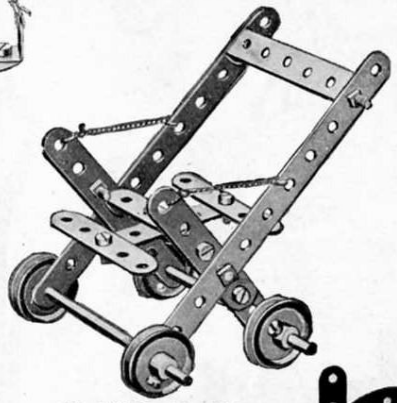
Model
No. 00.253
Telegraph
Pole



Model
No. 00.250
Clothes
Drying
Frame

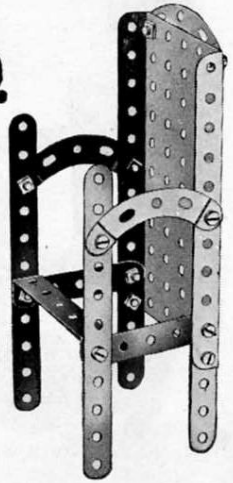


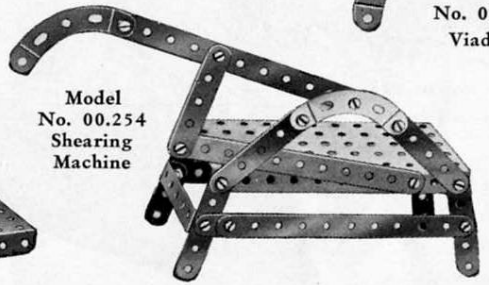
Model
No. 00.251
Viaduct



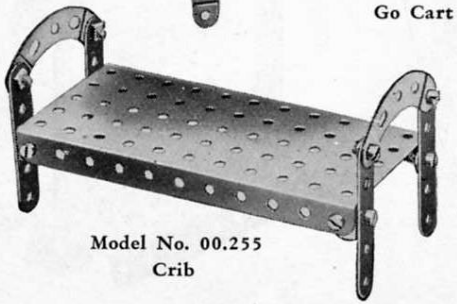
Model No. 00.252
Go Cart

Model
No. 00.256
Arm
Chair

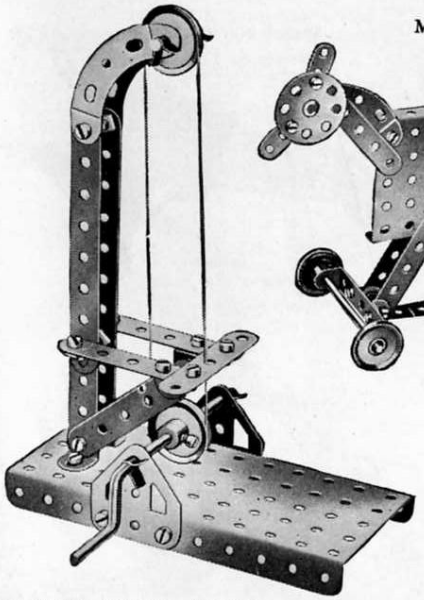




Model
No. 00.254
Shearing
Machine

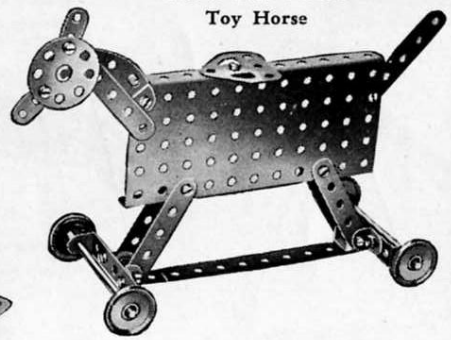


Model No. 00.255
Crib

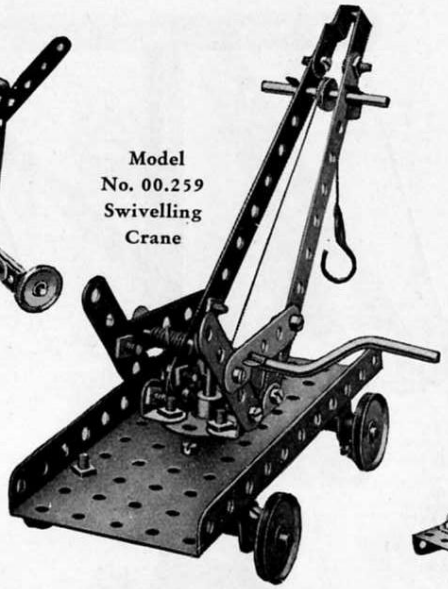


Model No. 00.257—Band Saw

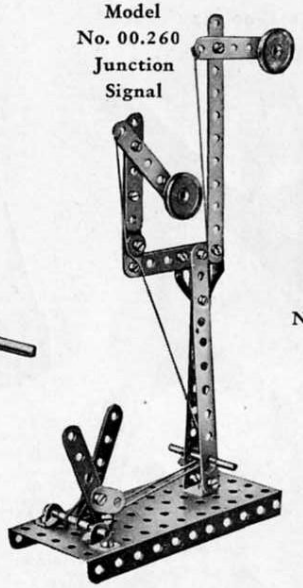
Model No. 00.258
Toy Horse



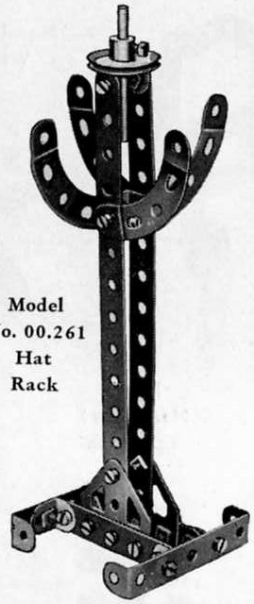
Model
No. 00.259
Swivelling
Crane

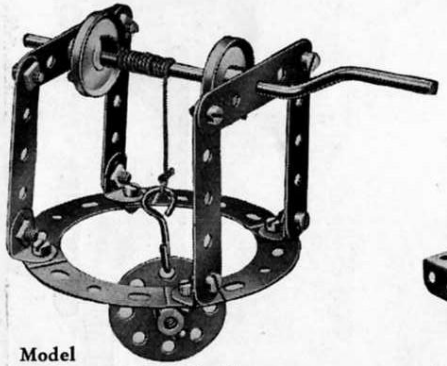


Model
No. 00.260
Junction
Signal

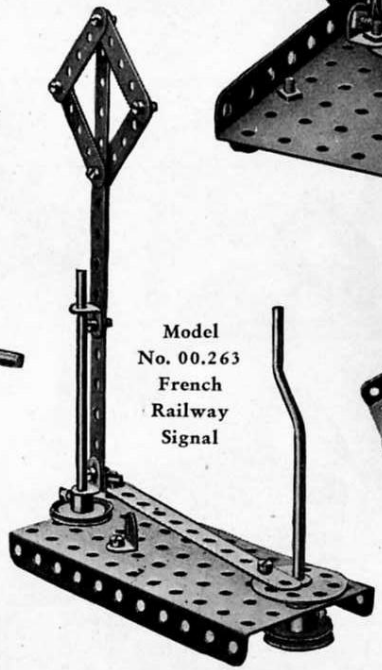


Model
No. 00.261
Hat
Rack

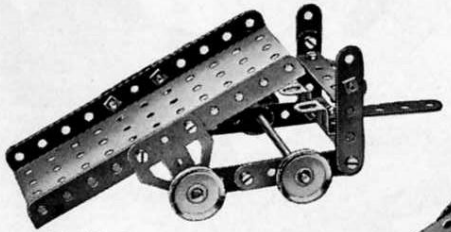




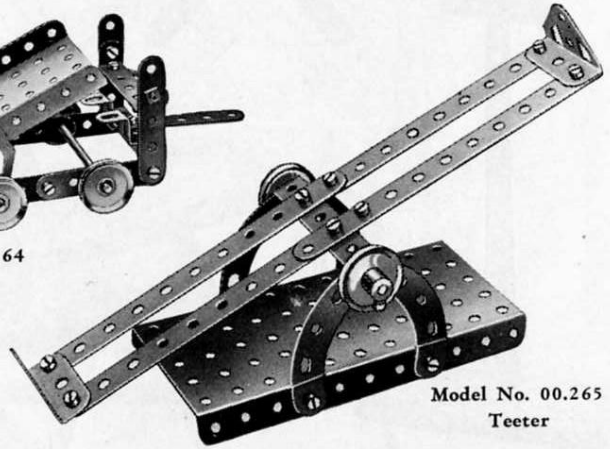
Model
No. 00.262—Well Windlass



Model
No. 00.263
French
Railway
Signal

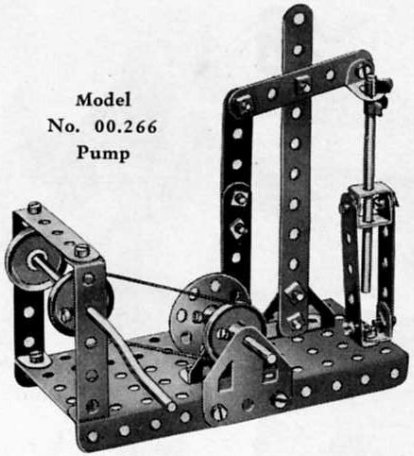


Model No. 00.264
Dump Cart



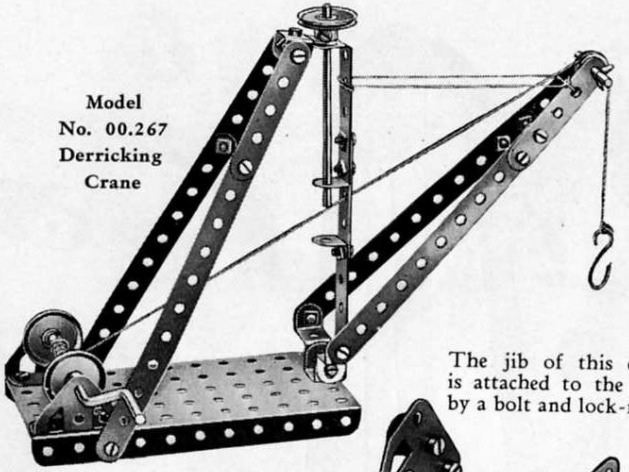
Model No. 00.265
Teeter

Model No. 00.266 Pump



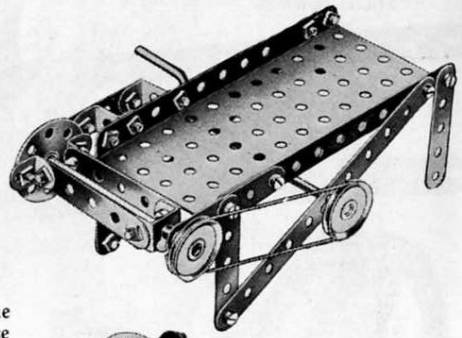
The connecting Strip is pivoted by bolts and nuts at one end to the Bush Wheel and at the other end to the cross beam. The latter is pivoted by the same means to the upright.

Model No. 00.267 Derricking Crane

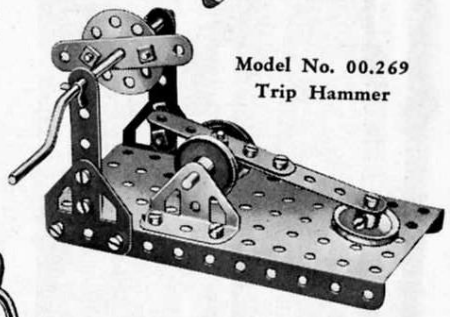


The jib of this crane is attached to the base by a bolt and lock-nuts.

Model No. 00.268—Chaff Cutter



Model No. 00.269 Trip Hammer



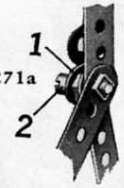
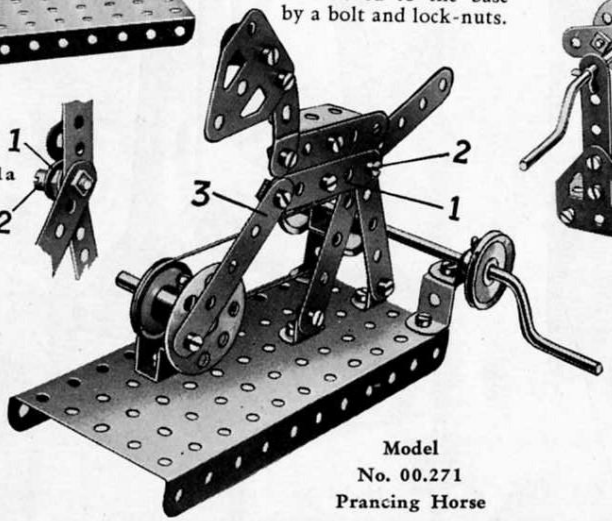
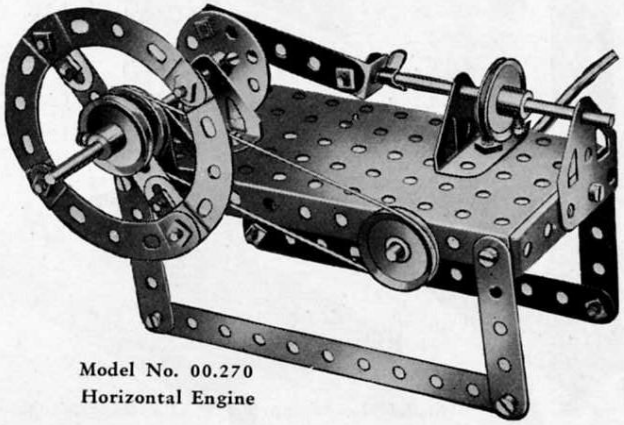


Fig. 00.271a

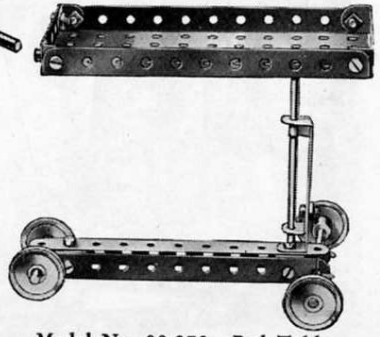


Model No. 00.271 Prancing Horse

The Strip 1 forming part of the body is free to move about the bolt 2, but two nuts on the latter secure the rear legs and tail rigidly together. The arrangement of the various Strips about this bolt 2 is shown more clearly in Fig. 00.271a. The Strip 3 is free to move at each end about pivots formed from bolts and nuts.

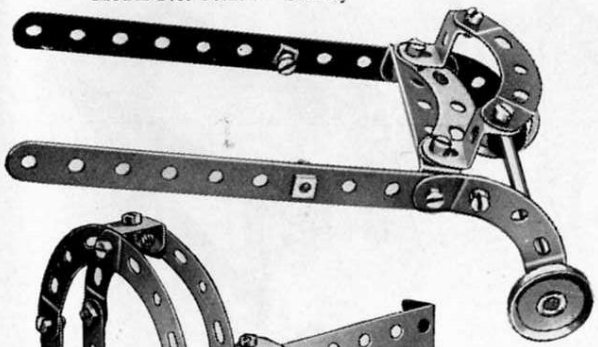


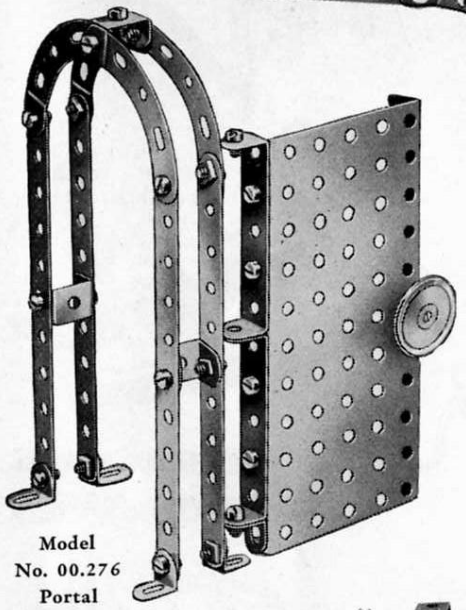
Model No. 00.270 Horizontal Engine



Model No. 00.272—Bed Table

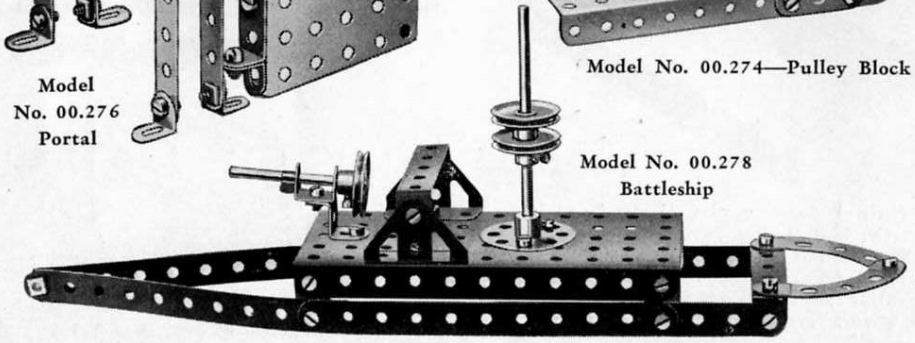
Model No. 00.273—Sulkey





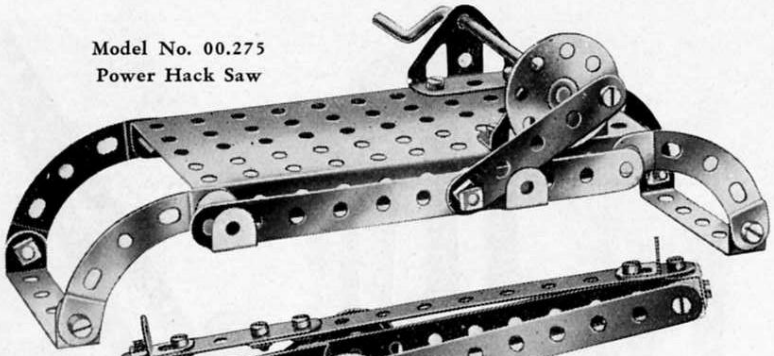
Model No. 00.276
Portal

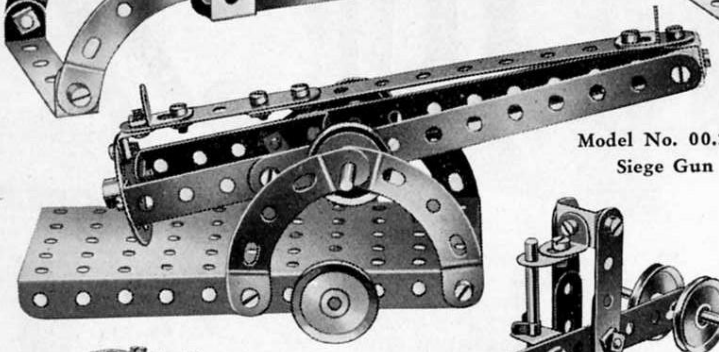
Model No. 00.274—Pulley Block



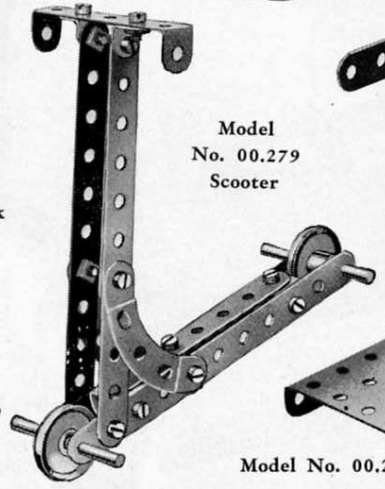
Model No. 00.278
Battleship

Model No. 00.275
Power Hack Saw

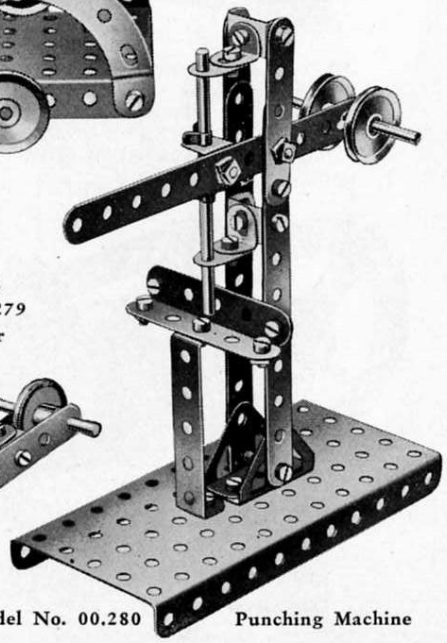




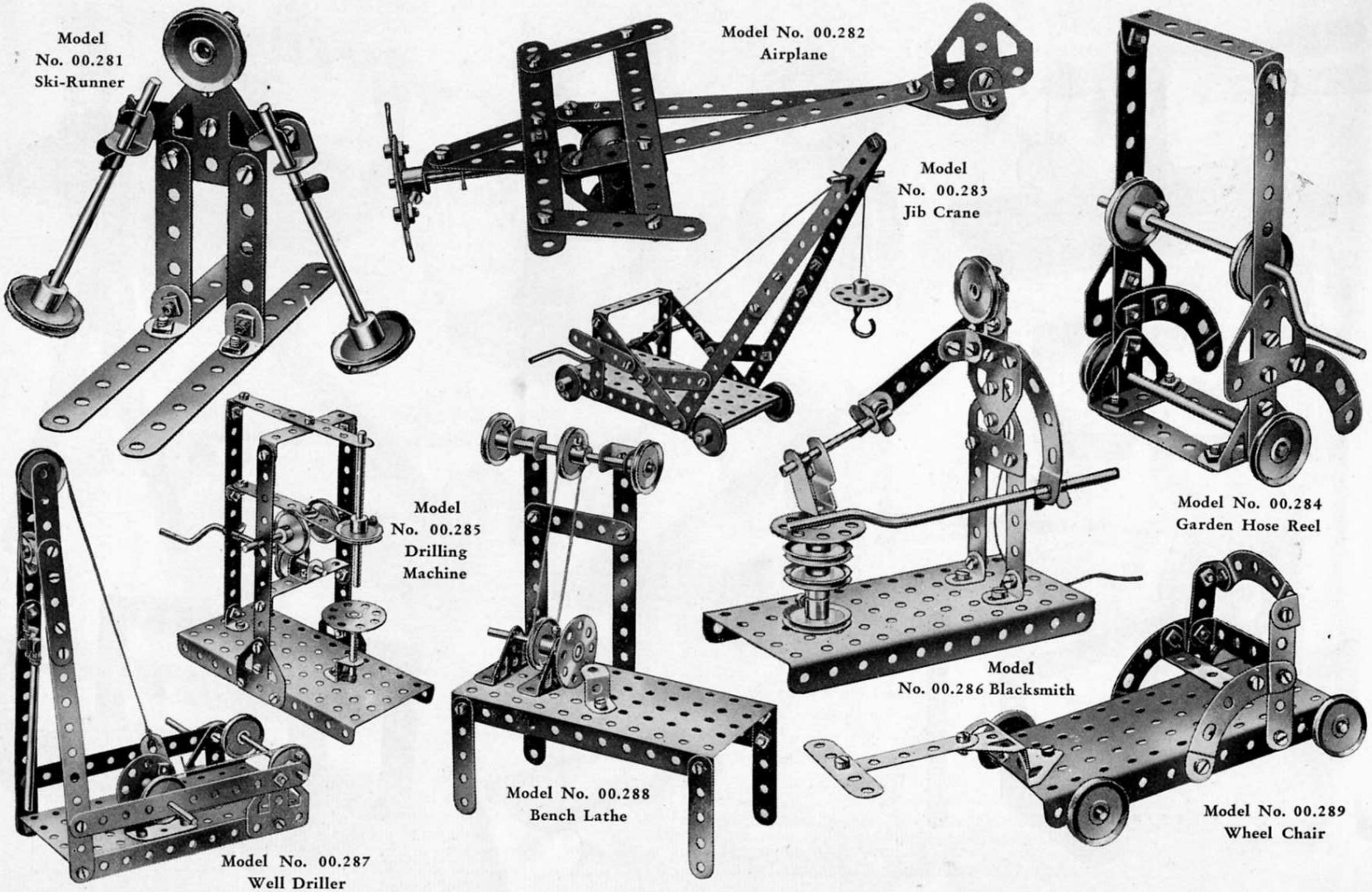
Model No. 00.277
Siege Gun



Model
No. 00.279
Scooter



Model No. 00.280 Punching Machine



Model No. 00.281 Ski-Runner

Model No. 00.282 Airplane

Model No. 00.283 Jib Crane

Model No. 00.284 Garden Hose Reel

Model No. 00.285 Drilling Machine

Model No. 00.286 Blacksmith

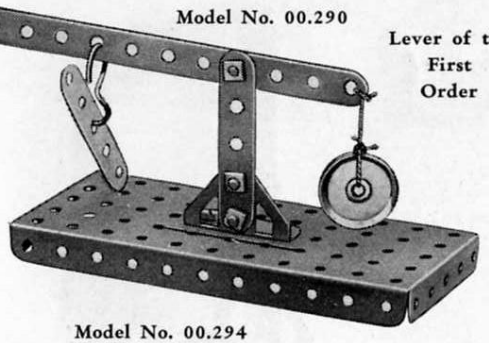
Model No. 00.287 Well Driller

Model No. 00.288 Bench Lathe

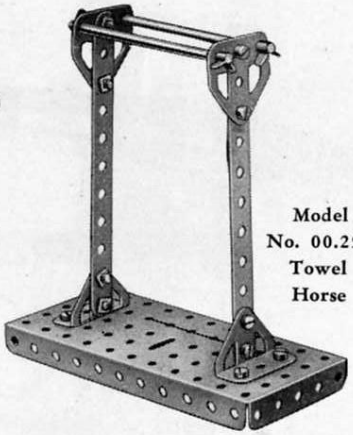
Model No. 00.289 Wheel Chair

These Models can be made with MECCANO Outfit No. 00.

Model No. 00.290
Lever of the First Order

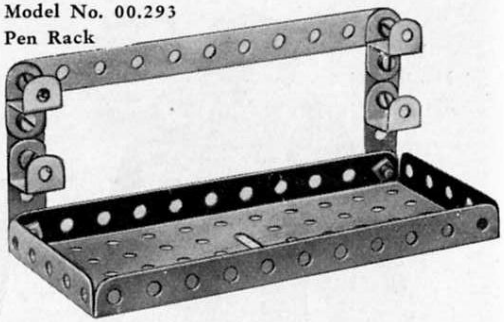


Model No. 00.291
Friction Grip Tongs

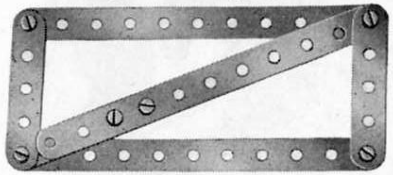


Model No. 00.292
Towel Horse

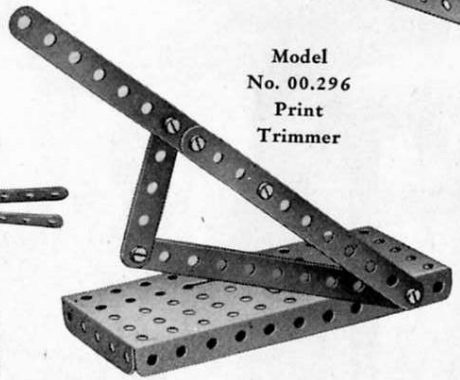
Model No. 00.293
Pen Rack



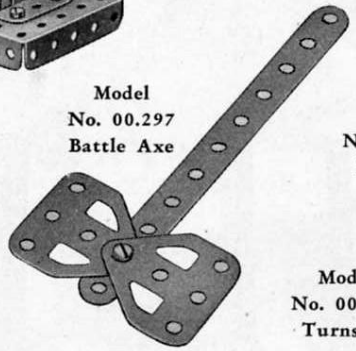
Model No. 00.294
Rectangle with Diagonal



Model No. 00.295
Tweezers

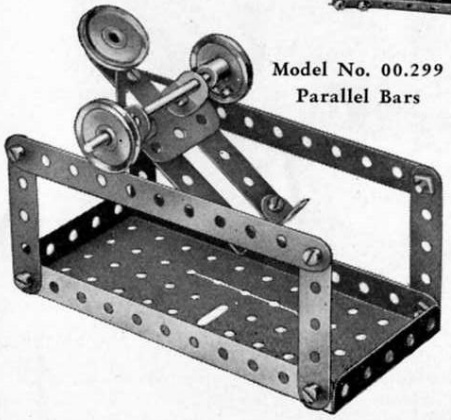


Model No. 00.296
Print Trimmer



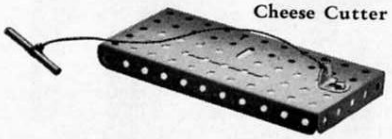
Model No. 00.297
Battle Axe

Model No. 00.298
Dividers



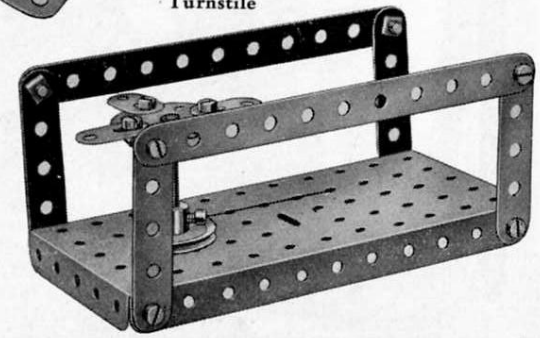
Model No. 00.299
Parallel Bars

Model No. 00.300
Tin Opener



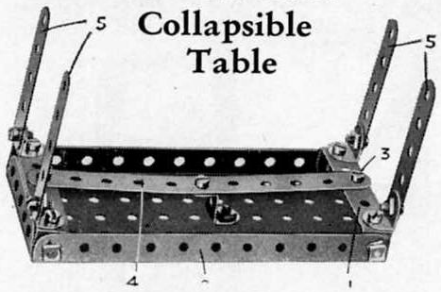
Model No. 00.301
Cheese Cutter

Model No. 00.302
Turnstile



Model No. 00.303

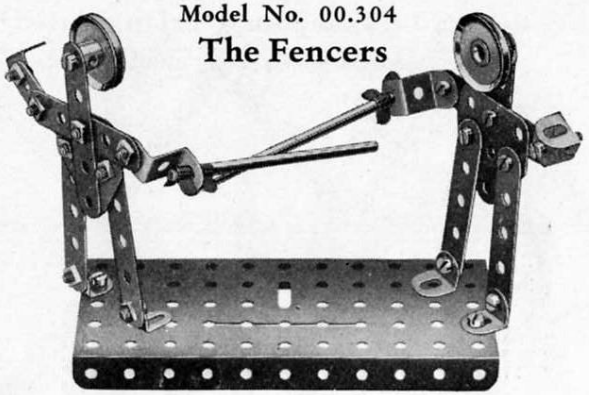
Collapsible Table



The 2½"x½" Double Angle Strips 1 are attached to the 5½"x2½" Flanged Plate 2 by lock-nutted bolts, as in Standard Mechanism No. 263. The bolts 3 are secured to the 5½" Strip 4 and their shanks engage with the centre holes in the 2½"x½" Double Angle Strips 1, thus maintaining the legs 5 in an upright position. When it is desired to fold up the legs 5, it is only necessary to raise the ends of the Strips 4, thus freeing the Double Angle Strips 1.

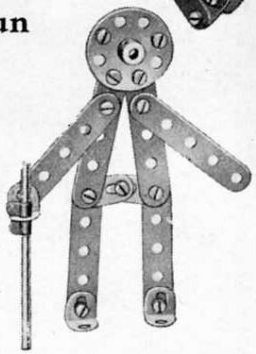
Model No. 00.304

The Fencers



Model No. 00.305

Lewis Gun

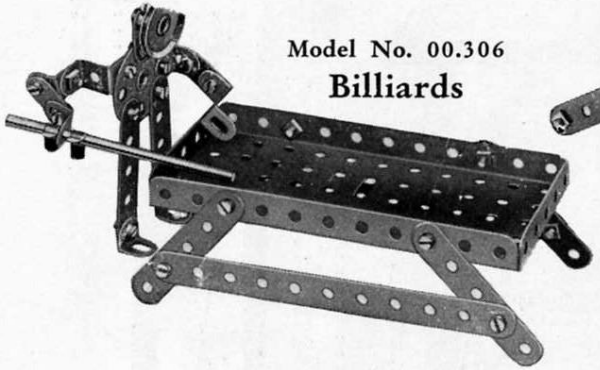


Model No. 00.309

Meccano Man

Model No. 00.307

Prehistoric Animal

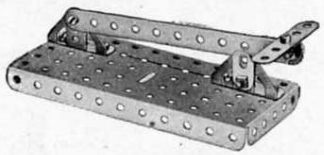


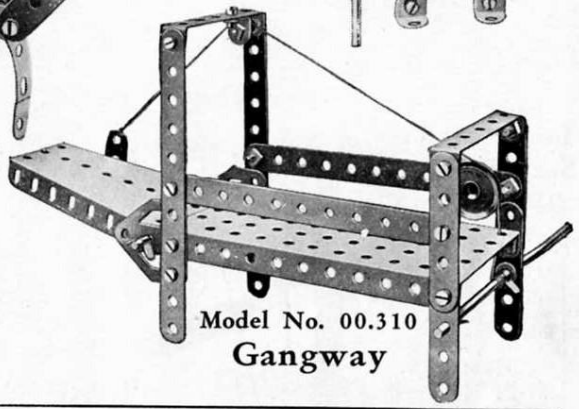
Model No. 00.306

Billiards

Model No. 00.308

Knife Switch





Model No. 00.310

Gangway

HOW TO CONTINUE

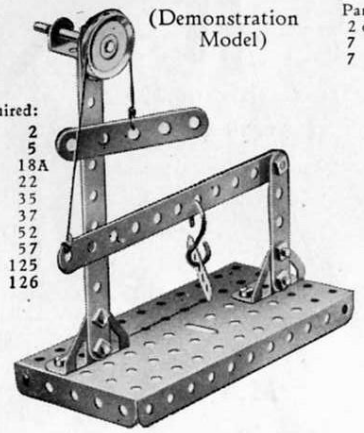
Do not consider that you have exhausted the possibilities of your No. 00 Meccano Outfit when you have made the 470 models here illustrated. With the experience you have gained you can now become an inventor and design entirely new models to your own ideas. If you strike trouble we will gladly place all our knowledge and experience at your disposal. Write to "Engineer Dept.," Meccano Co., Inc., Elizabeth, N. J.

You will probably wish to make bigger and more elaborate models and you can do this either by purchasing a No. 00a Meccano Accessory Outfit or some extra Meccano separate parts. You will find all the prices at the end of this book.

Model No. 1.1

Lever of the Third Order

(Demonstration Model)



Parts required:

2	of No.	2
4	" "	5
1	" "	18A
1	" "	22
1	" "	35
11	" "	37
1	" "	52
1	" "	57
1	" "	125
2	" "	126

Model No. 1.2

Lever of the Second Order

(Demonstration Model)

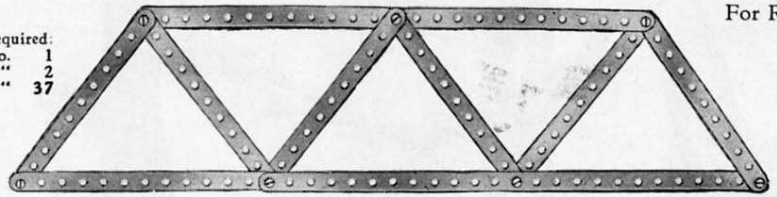
Parts required:

2	of No.	2
4	" "	5
1	" "	18A
1	" "	22
1	" "	35
11	" "	37
1	" "	52
1	" "	57
1	" "	125
1	" "	126
1	" "	126A

Model No. 1.3 **Compound Triangulated Truss**

Parts required:

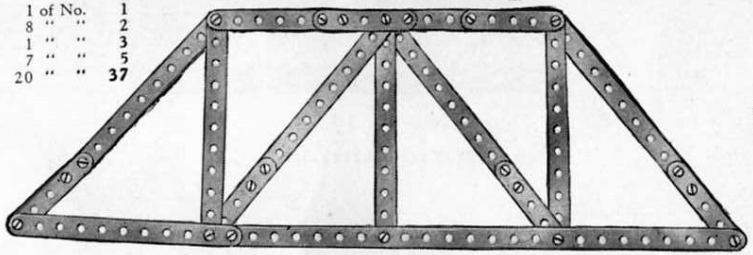
2	of No.	1
7	" "	2
7	" "	37



Model No. 1.4 **Howe Truss**

Parts required:

1	of No.	1
8	" "	2
1	" "	3
7	" "	5
20	" "	37

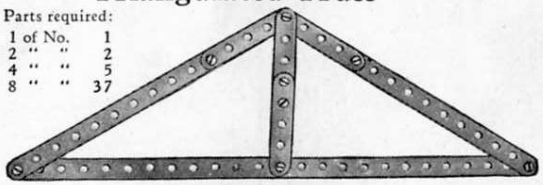


Model No. 1.5

Triangulated Truss

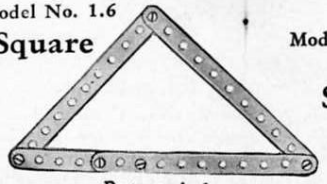
Parts required:

1	of No.	1
2	" "	2
4	" "	5
8	" "	37



Model No. 1.6

60° Set-Square



Parts required:

3	of No.	2	5	" "	37
1	" "	5			

Model No. 1.7

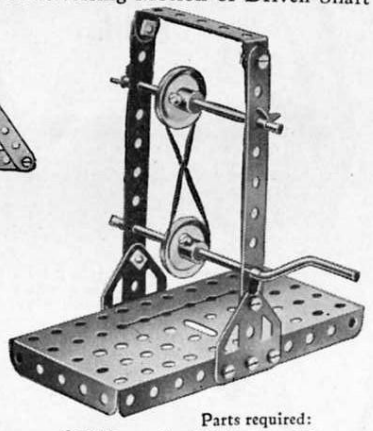
45° Set-Square

Parts required:

2	of No.	2
1	" "	3
2	" "	10
5	" "	37

Model No. 1.8 **Belt Gear**

For Reversing Motion of Driven Shaft



Parts required:

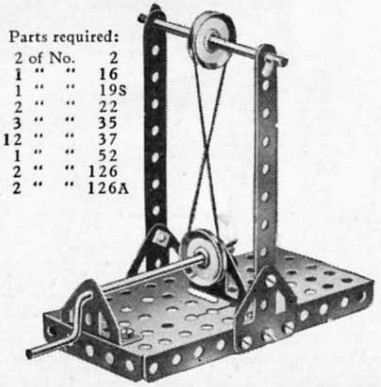
2	of No.	2	10	" "	37
1	" "	16	1	" "	48A
1	" "	19S	1	" "	52
2	" "	22	2	" "	126A
4	" "	35			

Model No. 1.9 **Belt Gear**

For Driving Shafts at Right Angle

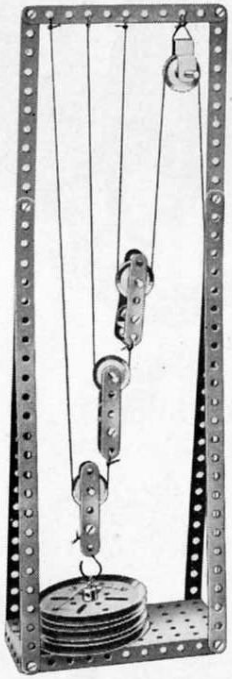
Parts required:

2	of No.	2
1	" "	16
1	" "	19S
2	" "	22
3	" "	35
12	" "	37
1	" "	52
2	" "	126
2	" "	126A



Model No. 1.10 Pulley Block

Demonstration Model; 1 Fixed and 3 Movable Sheaves

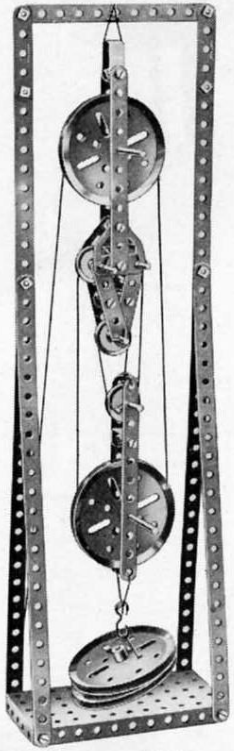


Parts required:

4 of No.	1	2 of No.	18A
3 " "	2	3 " "	19B
6 " "	5	4 " "	22
2 " "	11	15 " "	37
2 " "	12	1 " "	44
2 " "	17	1 " "	52
		1 " "	57

Model No. 1.11 Pulley Block

Demonstration Model; 3 Fixed and 2 Movable Sheaves

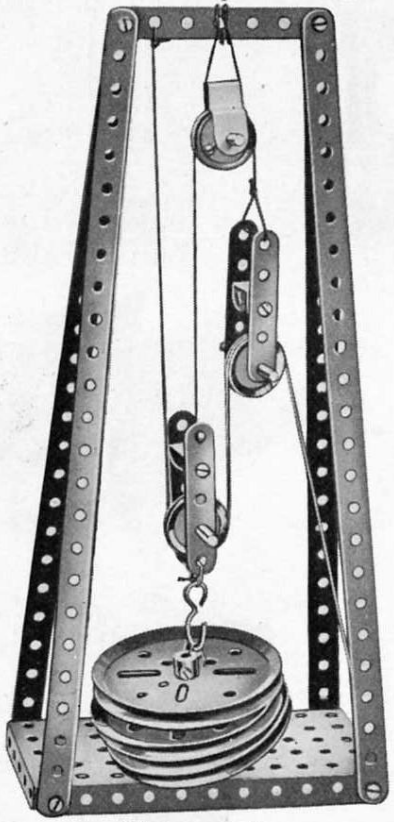


Parts required:

4 of No.	1	4 of No.	19B
7 " "	2	4 " "	22
6 " "	5	6 " "	35
2 " "	10	22 " "	37
2 " "	11	1 " "	44
2 " "	16	1 " "	52
2 " "	17	1 " "	57
2 " "	18A	2 " "	126

Model No. 1.12 Pulley Block

Demonstration Model; 1 Fixed Sheave and 2 suspended Blocks



Parts required:

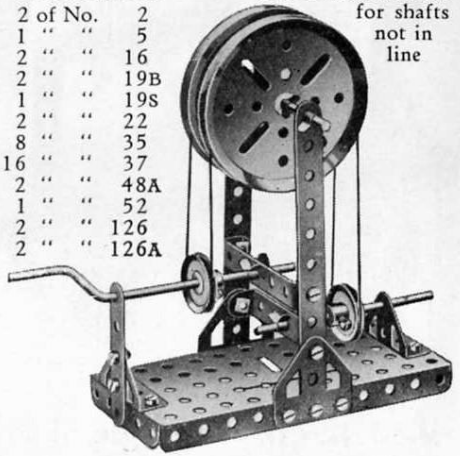
4 of No.	1	4 of No.	19B
1 " "	3	3 " "	22
4 " "	5	10 " "	37
2 " "	11	1 " "	44
1 " "	17	1 " "	52
2 " "	18A	1 " "	57

Model No. 1.13 Belt Gear

Drive Transmission for shafts not in line

Parts required:

2 of No.	2
1 " "	5
2 " "	16
2 " "	19B
1 " "	19S
2 " "	22
8 " "	35
16 " "	37
2 " "	48A
1 " "	52
2 " "	126
2 " "	126A

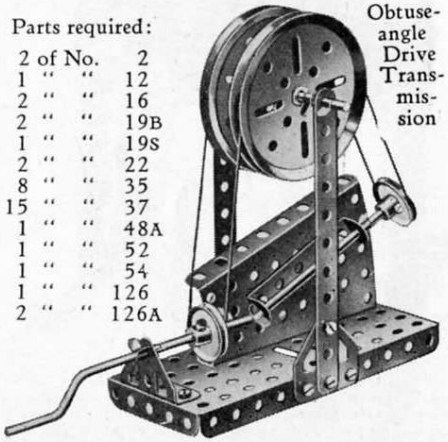


Model No. 1.14 Belt Gear

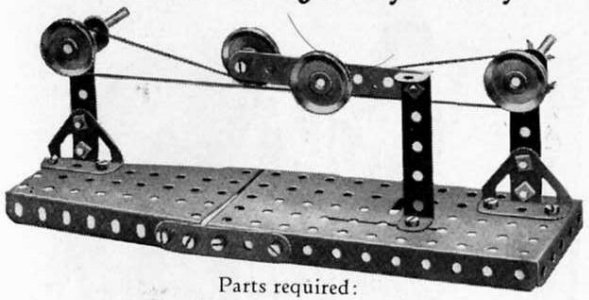
Obtuse-angle Drive Transmission

Parts required:

2 of No.	2
1 " "	12
2 " "	16
2 " "	19B
1 " "	19S
2 " "	22
8 " "	35
15 " "	37
1 " "	48A
1 " "	52
1 " "	54
1 " "	126
2 " "	126A



Model No. 1.15 Jockey Pulley



Parts required:

1 of No.	3	2 of No.	35	1 of No.	52
4 " "	5	20 " "	37	1 " "	54
2 " "	17	1 " "	37A	2 " "	111C
4 " "	22	1 " "	48A	2 " "	126

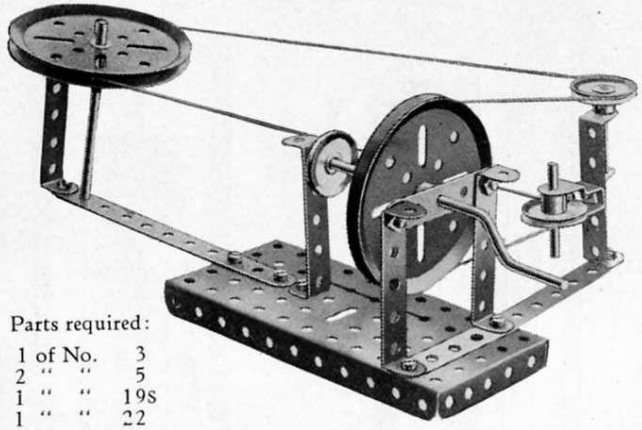
The weight of the pivoted 3½" Strip, augmented by the 1" fast Pulley Wheel, causes the jockey pulley to press on the belt. Hence the latter is kept always taut.

Model No. 1.16 Belt Gear

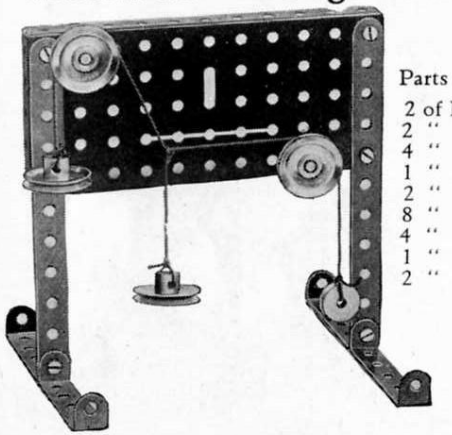
Parts required:

2 of No.	2	3 of No.	22		
1 " "	5	1 " "	35		
1 " "	16	11 " "	37		
1 " "	17	1 " "	44		
1 " "	18A	1 " "	48		
2 " "	19B	5 " "	48A		
1 " "	19S	1 " "	52		

Right-angle Drive Transmission



Model No. 1.17 Triangle of Forces

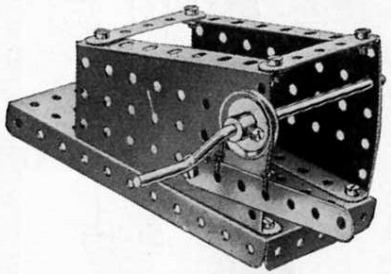


Parts required:

2 of No.	2		
2 " "	18A		
4 " "	22		
1 " "	23		
2 " "	35		
8 " "	37		
4 " "	48A		
1 " "	52		
2 " "	125		

The suspended weights represent three forces acting on a central point. If a triangle is drawn with its sides respectively parallel to the three converging cords, i.e., parallel to the directions of the three forces, the lengths of the sides will be found to be proportional to the respective magnitudes of the forces.

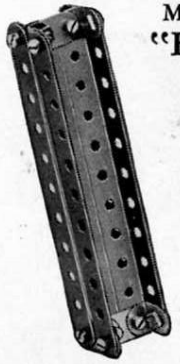
Model No. 1.18 Band Brake



Parts required:

1 of No.	3		
2 " "	5		
1 " "	19S		
1 " "	22		
1 " "	35		
9 " "	37		
1 " "	37A		
1 " "	52		
2 " "	54		

Model No. 1.19 "H" Girder



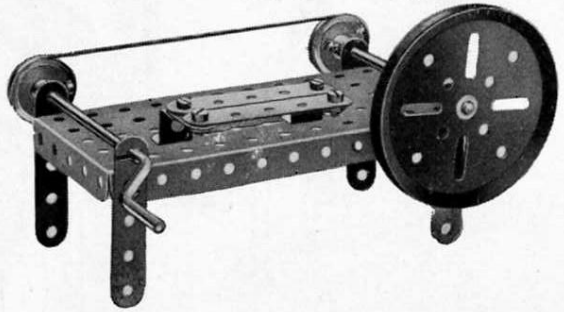
Parts required:

6 of No.	2		
2 " "	10		
8 " "	12		
12 " "	37		

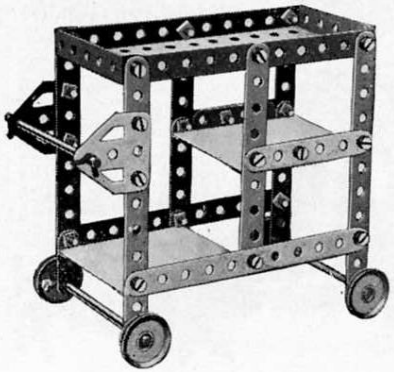
Model No. 1.20 Bacon Slicer

Parts required:

6 of No.	5	2 of No.	22
2 " "	10	1 " "	35
1 " "	16	10 " "	37
1 " "	19B	1 " "	52
1 " "	19S	2 " "	125



Model No. 1.21 Dinner Wagon

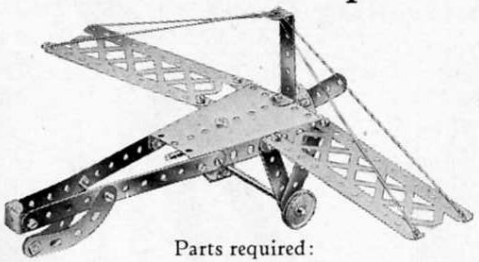


Parts required:

6 of No.	2		
8 " "	5		
4 " "	12		
3 " "	16		
4 " "	22		
2 " "	35		
22 " "	37		
4 " "	48A		
1 " "	52		
2 " "	126A		

The two lower platforms are constructed out of pieces of ordinary cardboard, their outer edges resting on 2½" Bent Strips and their inner edges on Angle Brackets.

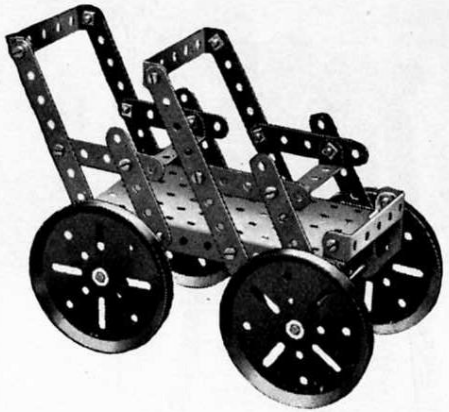
Model No. 1.22 Aeroplane



Parts required:

2 of No.	2	2 of No.	16	1 of No.	48A
5 " "	5	2 " "	22	1 " "	54
1 " "	11	1 " "	24	2 " "	90A
6 " "	12	21 " "	37	2 " "	100

Model No. 1.23 Tandem Car



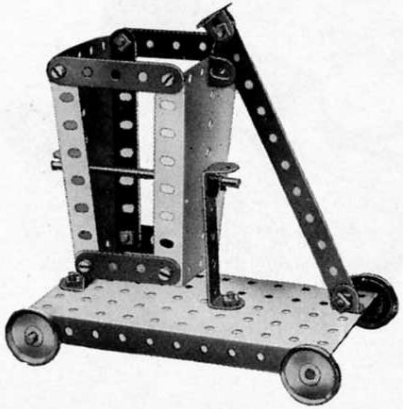
4 of No.	2	2 of No.	16	5 of No.	48A
8 " "	5	4 " "	19B	1 " "	52
2 " "	12	26 " "	37	2 " "	126A

Model No. 1.25 Lumber Carrier

Parts required:

4 of No.	2	2 of No.	16	8 of No.	37
2 " "	11	4 " "	22	4 " "	48A

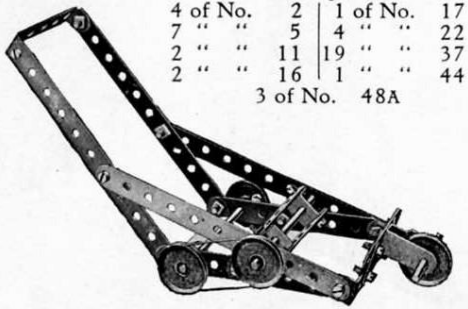
Model No. 1.24 Tip Wagon



Parts required:

1 of No.	2
4 " "	5
5 " "	12
3 " "	16
4 " "	22
2 " "	35
14 " "	37
2 " "	48A
1 " "	52
2 " "	54

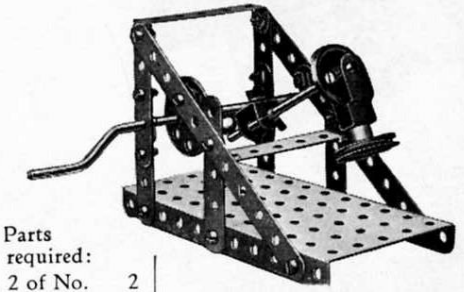
Model No. 1.26 Lawn Mower



Parts required:

4 of No.	2	1 of No.	17
7 " "	5	4 " "	22
2 " "	11	19 " "	37
2 " "	16	1 " "	44
		3 of No.	48A

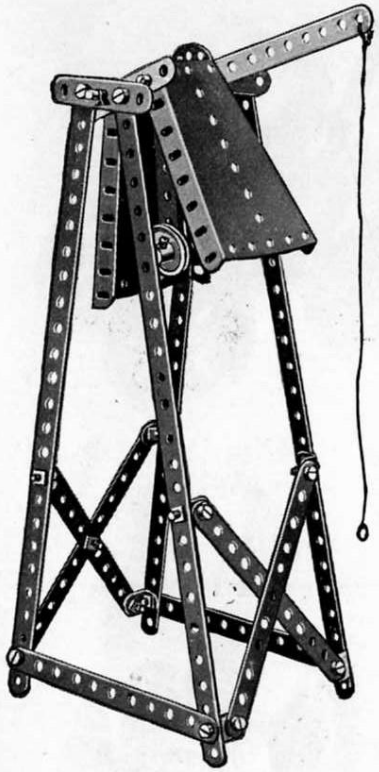
Model No. 1.27 Mechanical Hammer



Parts required:

2 of No.	2				
6 " "	5	1 of No.	19S	18 of No.	37
1 " "	11	2 " "	22	1 " "	44
1 " "	12	1 " "	24	3 " "	48A
1 " "	16	4 " "	35	1 " "	52

Model No. 1.28 Fire Alarm



The rear Sector Plate is weighted so that it normally hangs in the position shown. When the cord is jerked, the other Sector Plate strikes against the 1" fast Pulley Wheel, which is loosely suspended on a 3½" Strip, and the clapper is thus caused to strike each Sector Plate in turn.

Parts required:

4 of No.	1	8 of No.	12	4 of No.	35
7 " "	2	1 " "	16	27 " "	37
1 " "	3	1 " "	22	2 " "	54
3 " "	5	1 " "	24		

Model No. 1.29 Swivelling Crane

Parts required:

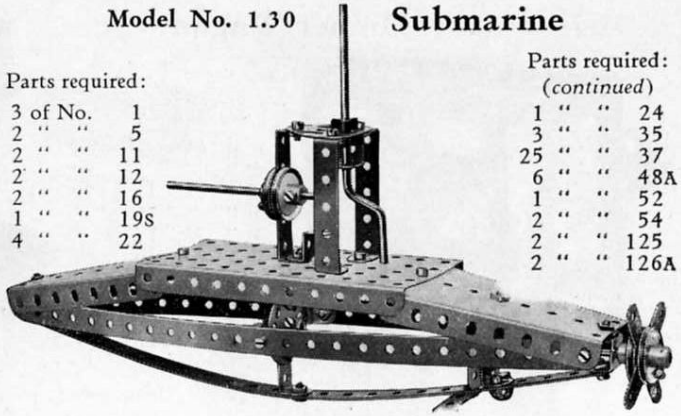
4 of No.	2	1 of No.	44
7 " "	5	1 " "	48A
2 " "	12	1 " "	52
2 " "	17	1 " "	54
1 " "	19S	1 " "	57
4 " "	22	2 " "	126A
1 " "	23		
2 " "	35		
21 " "	37		
3 " "	38		

The Sector Plate of the Crane in this model is pivoted to the base with a fast Pulley above and below.

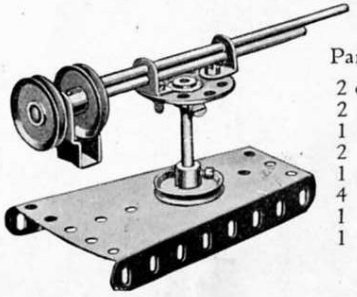
Model No. 1.30 Submarine

Parts required:

3 of No.	1	1 " "	24
2 " "	5	3 " "	35
2 " "	11	25 " "	37
2 " "	12	6 " "	48A
2 " "	16	1 " "	52
1 " "	19S	2 " "	54
4 " "	22	2 " "	125
		2 " "	126A



Model No. 1.31 Quick-Firing Gun



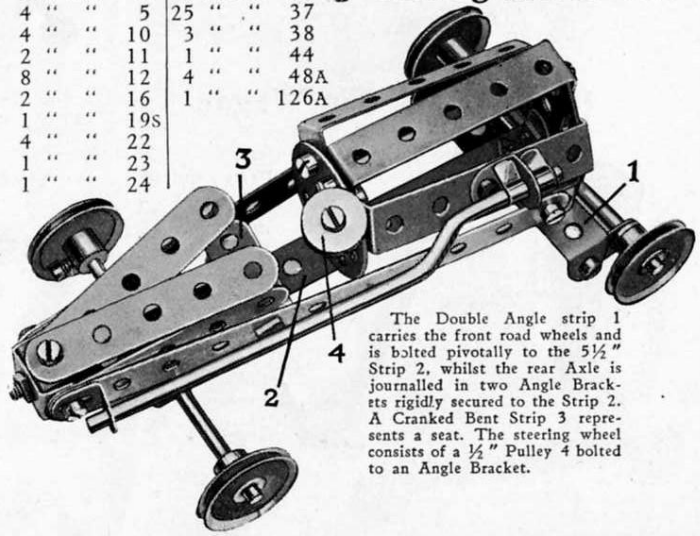
Parts required:

2 of No.	12	1 " "	44
2 " "	16	1 " "	54
1 " "	17		
2 " "	22		
1 " "	24		
4 " "	37		

Model No. 1.32 Racing Motor Car

Parts required:

3 of No.	2	4 of No.	35
4 " "	5	25 " "	37
4 " "	10	3 " "	38
2 " "	11	1 " "	44
8 " "	12	4 " "	48A
2 " "	16	1 " "	126A
1 " "	19S		
4 " "	22		
1 " "	23		
1 " "	24		



The Double Angle strip 1 carries the front road wheels and is bolted pivotally to the 5½" Strip 2, whilst the rear Axle is journalled in two Angle Brackets rigidly secured to the Strip 2. A Cranked Bent Strip 3 represents a seat. The steering wheel consists of a ½" Pulley 4 bolted to an Angle Bracket.

Model No. 1.33

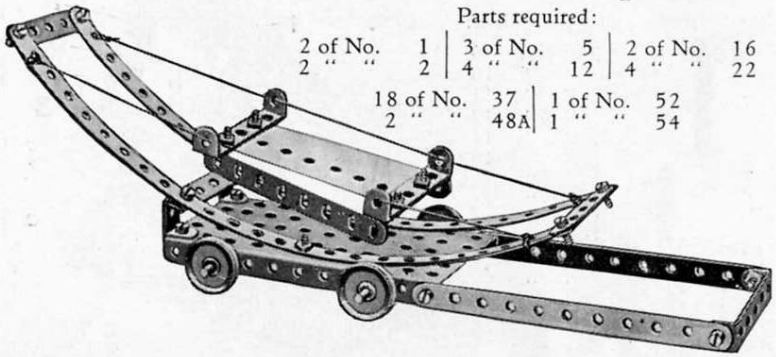
Tower Wagon

Parts required:

4	of No.	2
8	" "	5
2	" "	16
1	" "	17
1	" "	19S
4	" "	22
1	" "	23
4	" "	35
24	" "	37
1	" "	52
1	" "	54
1	" "	57
2	" "	126A

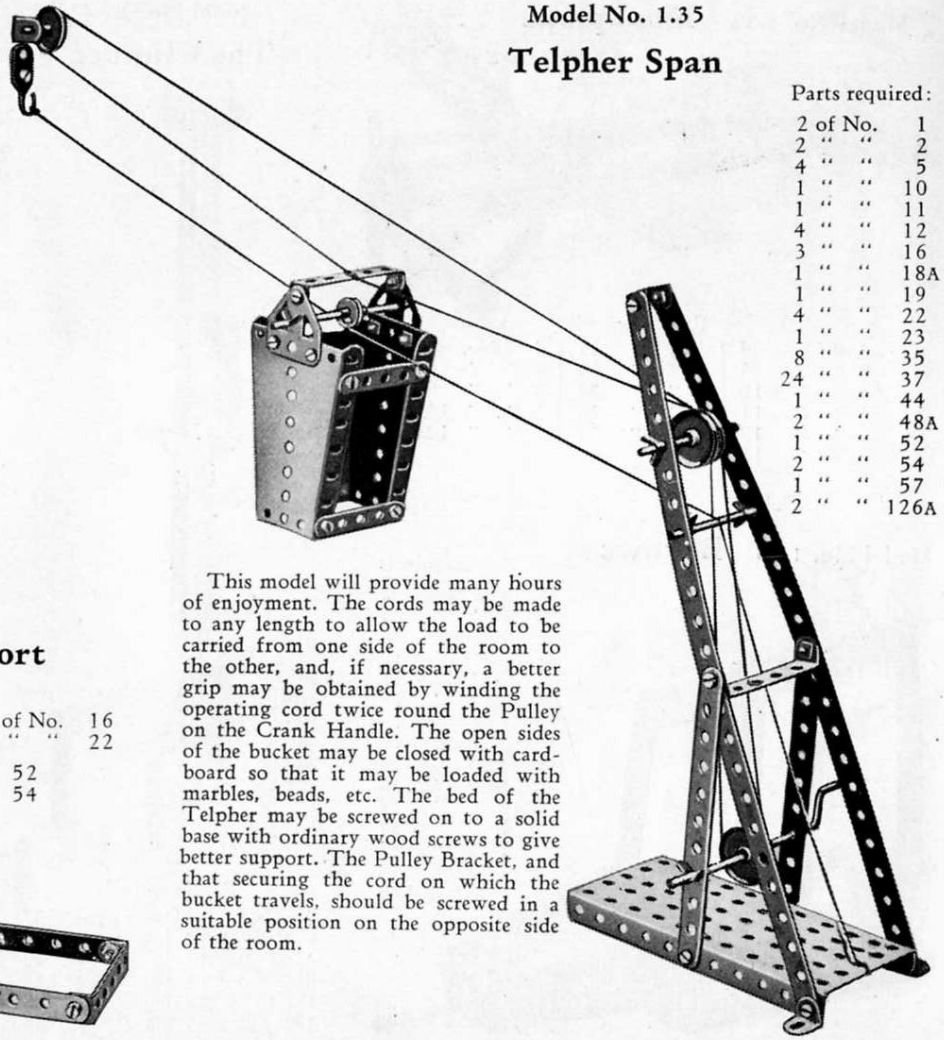
Model No. 1.34

Mountain Transport



Parts required:

2	of No.	1	3	of No.	5	2	of No. 16
2	" "	2	4	" "	12	4	" " 22
18	of No.	37	1	of No.	52		
2	" "	48A	1	" "	54		



Model No. 1.35

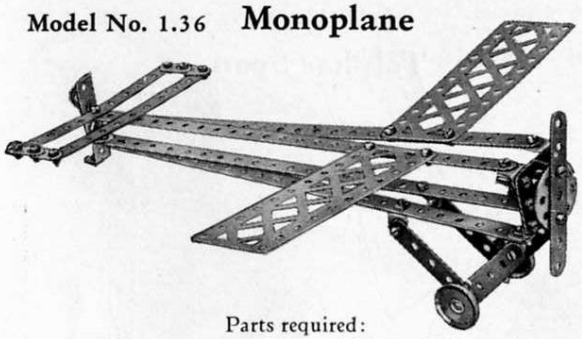
Telpher Span

Parts required:

2	of No.	1
2	" "	2
4	" "	5
1	" "	10
1	" "	11
4	" "	12
3	" "	16
1	" "	18A
1	" "	19
4	" "	22
1	" "	23
8	" "	35
24	" "	37
1	" "	44
2	" "	48A
1	" "	52
2	" "	54
1	" "	57
2	" "	126A

This model will provide many hours of enjoyment. The cords may be made to any length to allow the load to be carried from one side of the room to the other, and, if necessary, a better grip may be obtained by winding the operating cord twice round the Pulley on the Crank Handle. The open sides of the bucket may be closed with cardboard so that it may be loaded with marbles, beads, etc. The bed of the Telpher may be screwed on to a solid base with ordinary wood screws to give better support. The Pulley Bracket, and that securing the cord on which the bucket travels, should be screwed in a suitable position on the opposite side of the room.

Model No. 1.36 **Monoplane**

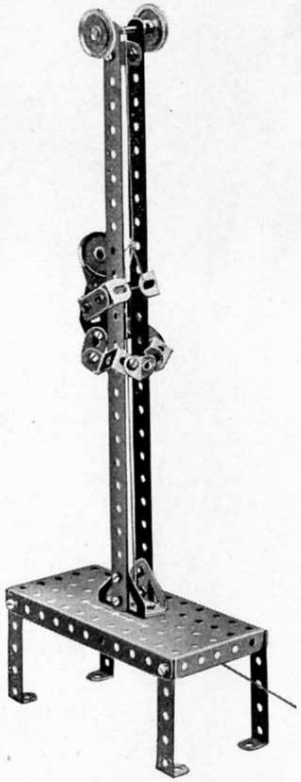


Parts required:

4 of No.	2	1 of No.	17	1 of No.	38
7 " "	5	1 " "	22	1 " "	48A
3 " "	10	1 " "	24	4 " "	90A
2 " "	11	1 " "	35	2 " "	100
3 " "	12	25 " "	37	2 " "	126
1 " "	16				

Model No. 1.37

The Climber



Parts required:

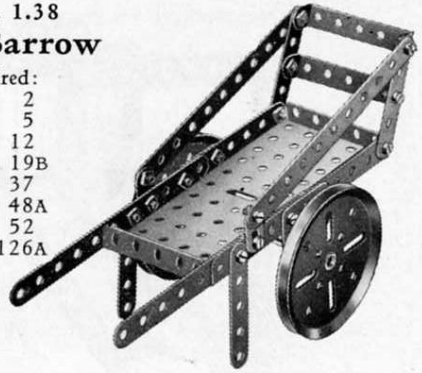
2 of No.	1	26 of No.	37
5 " "	10	4 " "	48A
1 " "	11	1 " "	52
6 " "	12	2 " "	125
1 " "	18A	2 " "	126
3 " "	22	1 " "	126A

Model No. 1.38

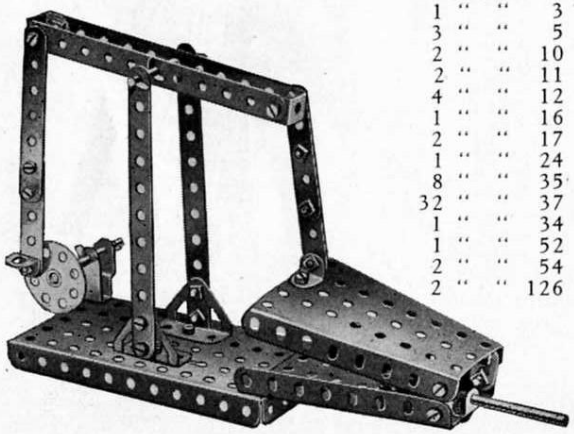
Coster's Barrow

Parts required:

4 of No.	2
2 " "	5
1 " "	12
2 " "	19B
16 " "	37
2 " "	48A
1 " "	52
2 " "	126A



Model No. 1.39 **Bellows**



Parts required:

4 of No.	2
1 " "	3
3 " "	5
2 " "	10
2 " "	11
4 " "	12
1 " "	16
2 " "	17
1 " "	24
8 " "	35
32 " "	37
1 " "	34
1 " "	52
2 " "	54
2 " "	126

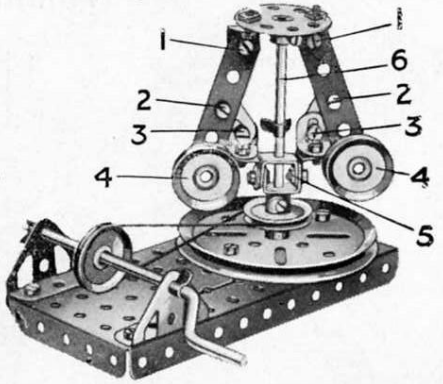
Model No. 1.40

Centrifugal Governor

The 3" Pulley Wheel is bolted to the 5½"x2½" Flanged Plate as shown, and the Rod 6 is free to rotate in its boss. The bolts 1, 2, 3 are provided with lock-nuts. When the engine to which the governor is attached works at too great a speed, the 1" fast Pulley Wheels 4 fly outward and lift the two Double Brackets 5. In actual practice this movement is utilized to close the engine valve and so reduce speed.

Parts required:

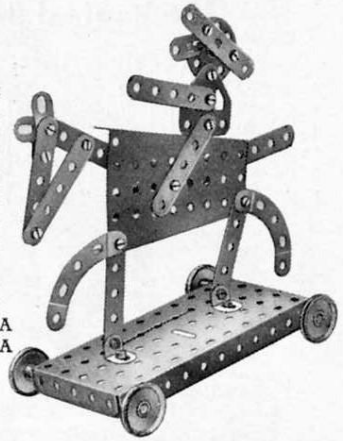
2 of No.	5
2 " "	10
2 " "	11
6 " "	12
1 " "	16
1 " "	19B
1 " "	19S
4 " "	22
1 " "	24
3 " "	35
18 " "	37
6 " "	37A
2 " "	111C
2 " "	126



Model No. 1.41 Horseman

Parts required:

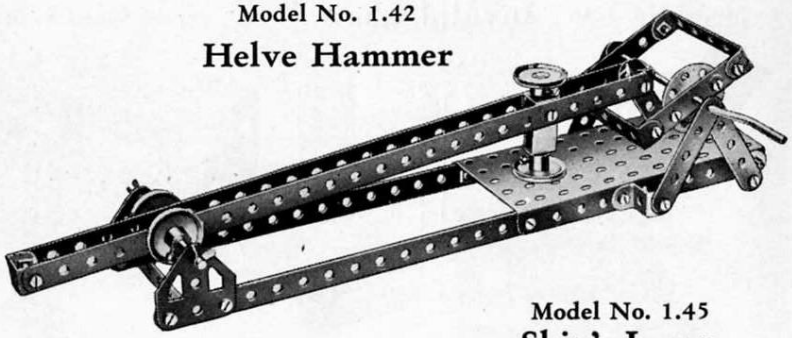
2	of No.	2
7	" "	5
4	" "	10
2	" "	12
2	" "	16
4	" "	22
1	" "	24
17	" "	37
1	" "	52
1	" "	54
2	" "	90A
2	" "	126A



Model No. 1.42 Helve Hammer

Parts required:

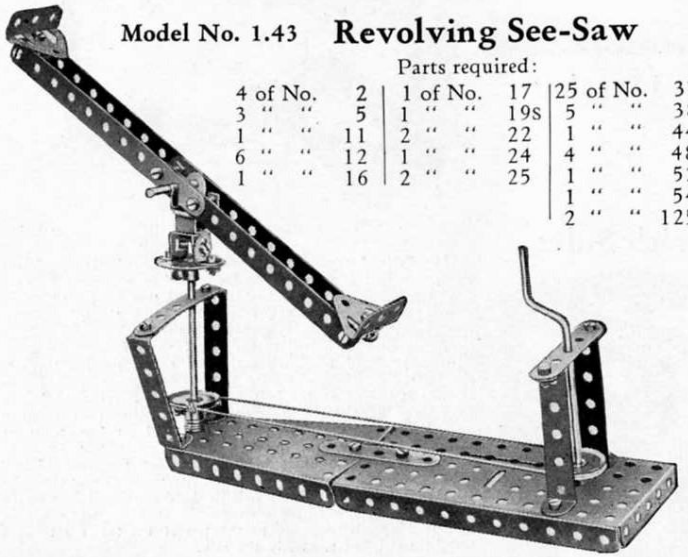
4	of No.	1
6	" "	5
2	" "	11
2	" "	12
1	" "	16
1	" "	17
1	" "	19S
4	" "	22
1	" "	24
4	" "	35
23	" "	37
1	" "	44
3	" "	48A
1	" "	52
2	" "	125
2	" "	126A



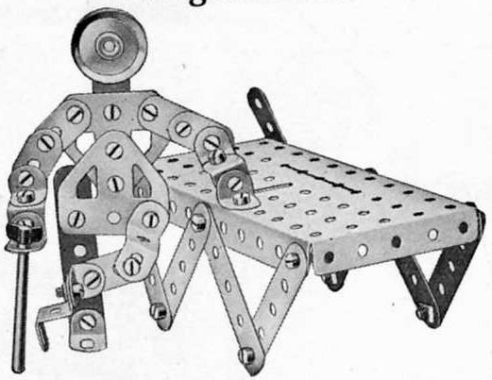
Model No. 1.43 Revolving See-Saw

Parts required:

4	of No.	2	1	of No.	17	25	of No.	37
3	" "	5	1	" "	19S	5	" "	38
1	" "	11	2	" "	22	1	" "	44
6	" "	12	1	" "	24	4	" "	48A
1	" "	16	2	" "	25	1	" "	52
						1	" "	54
						2	" "	125



Model No. 1.44 King Meccano



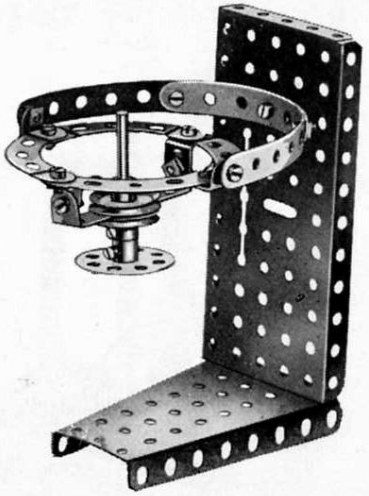
Parts required:

1	of No.	3	29	of No.	37
9	" "	5	1	" "	52
4	" "	10	1	" "	100
1	" "	17	2	" "	111C
1	" "	22	2	" "	125

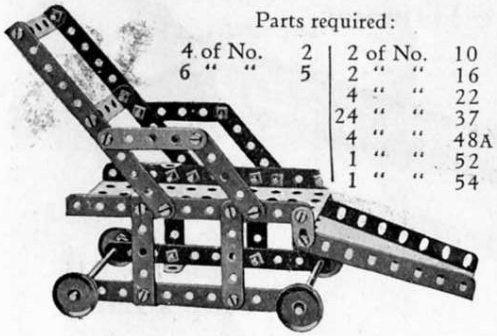
Model No. 1.45 Ship's Lamp

Parts required:

2	of No.	2	4	" "	37A
4	" "	12	1	" "	48A
1	" "	17	1	" "	52
2	" "	22	1	" "	54
1	" "	24	4	" "	90A
11	" "	37	2	" "	111C



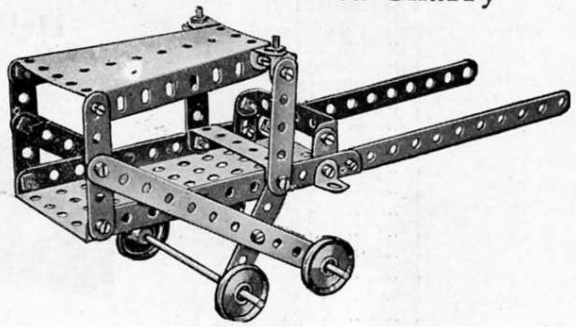
Model No. 1.46 Invalid Chair



Parts required:

4 of No.	2	2 of No.	10
6 " "	5	2 " "	16
		4 " "	22
		24 " "	37
		4 " "	48A
		1 " "	52
		1 " "	54

Model No. 1.47 Ticca Gharry



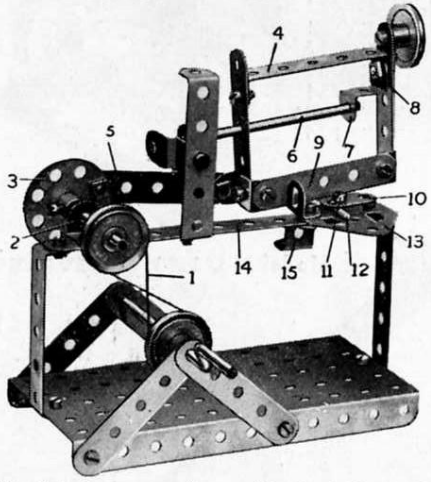
Parts required:

4 of No.	2	2 of No.	16	2 of No.	48A
6 " "	5	4 " "	22	1 " "	52
2 " "	10	22 " "	37	1 " "	54
6 " "	12				

Model No. 1.48 Mechanical Saw

Parts required:

1 of No.	2	1 of No.	17	4 of No.	38
8 " "	5	1 " "	19S	1 " "	44
1 " "	10	3 " "	22	4 " "	48A
1 " "	11	1 " "	24	1 " "	52
4 " "	12	3 " "	35	2 " "	125
1 " "	16	22 " "	37	1 " "	126A

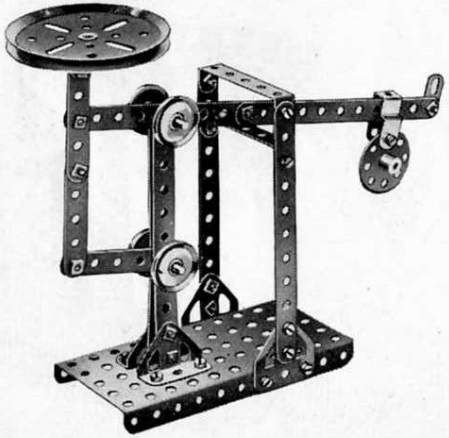


The Strip 9 represents the saw. The Crank Handle drives through a belt 1 a short Rod journalled in a Double Bracket 2 and carrying a Bush Wheel 3. The latter imparts a reciprocating motion to the saw frame 4 through a 2½" Strip 5 loosely mounted on bolts secured to the Bush Wheel and to an Angle Bracket bolted to the saw frame. This frame slides on a 3½" Rod 6, which acts as a guide, passing through the frame and supported in a Reversed Angle Bracket 7. A Washer is placed on the bolt 8 behind the Bracket 7. A vice to secure the objects in position for cutting consists of a Flat Bracket 10 mounted on a bolt 11, a few turns of which causes the Flat Bracket to grip the object 12. The bolt 11 enters a nut held between the Flat Trunnion 13 and 5½" Strip 14, which are spaced apart for the purpose by Washers placed on the two bolts holding the Trunnion in position. The saw frame rests on the stop 15 when not in use. A 1" Pulley secured to the top of the frame acts as a weight and helps to steady the saw.

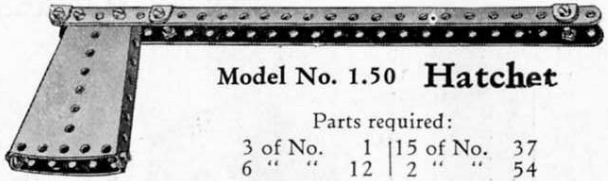
Model No. 1.49 Letter Balance

Parts required:

6 of No.	2	4 of No.	22	2 of No.	48A
3 " "	5	1 " "	24	1 " "	52
1 " "	10	26 " "	37	2 " "	111C
1 " "	12	4 " "	37A	2 " "	126
2 " "	18A	2 " "	38	2 " "	126A
1 " "	19B	1 " "	44		



Model No. 1.50 Hatchet



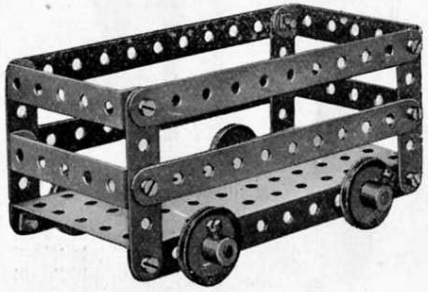
Parts required:

3 of No.	1	15 of No.	37
6 " "	12	2 " "	54

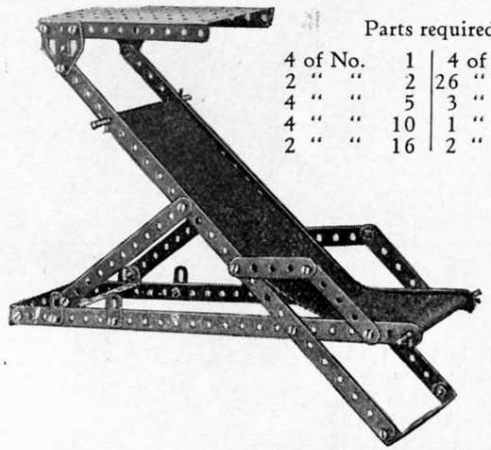
Model No. 1.51 Truck with Sides

Parts required:

4 of No.	2
4 " "	5
2 " "	16
4 " "	22
12 " "	37
4 " "	48A
1 " "	52



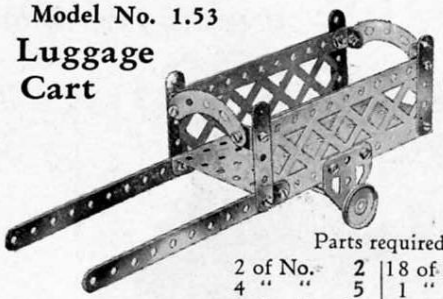
Model No. 1.52 Deck Chair



Parts required:

4 of No.	1	4 of No.	35
2 " "	2	26 " "	37
4 " "	5	3 " "	48A
4 " "	10	1 " "	52
2 " "	16	2 " "	126A

Model No. 1.53 Luggage Cart



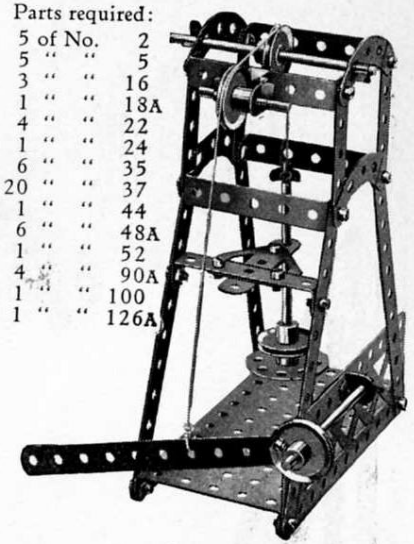
Parts required:

2 of No.	2	18 of No.	37
4 " "	5	1 " "	52
4 " "	12	2 " "	90A
1 " "	16	2 " "	100
2 " "	22	2 " "	126A

Model No. 1.54 Mechanical Stamp

Parts required:

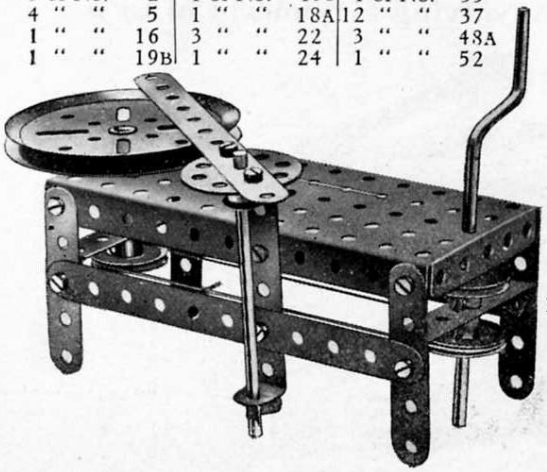
5 of No.	2
5 " "	5
3 " "	16
1 " "	18A
4 " "	22
1 " "	24
6 " "	35
20 " "	37
1 " "	44
6 " "	48A
1 " "	52
4 " "	90A
1 " "	100
1 " "	126A



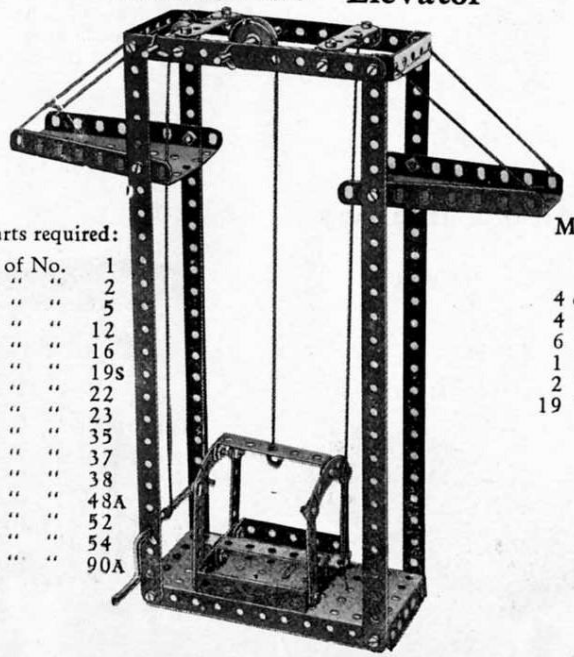
Model No. 1.55 Potter's Wheel

Parts required:

3 of No.	2	1 of No.	19S	1 of No.	35
4 " "	5	1 " "	18A	12 " "	37
1 " "	16	3 " "	22	3 " "	48A
1 " "	19B	1 " "	24	1 " "	52



Model No. 1.56 Elevator



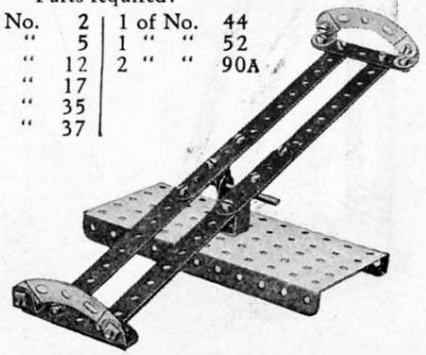
Parts required:

4 of No.	1
2 " "	2
8 " "	5
6 " "	12
2 " "	16
1 " "	19S
1 " "	22
1 " "	23
7 " "	35
32 " "	37
3 " "	38
6 " "	48A
1 " "	52
2 " "	54
2 " "	90A

Model No. 1.57 See-saw

Parts required:

4 of No.	2	1 of No.	44
4 " "	5	1 " "	52
6 " "	12	2 " "	90A
1 " "	17		
2 " "	35		
19 " "	37		

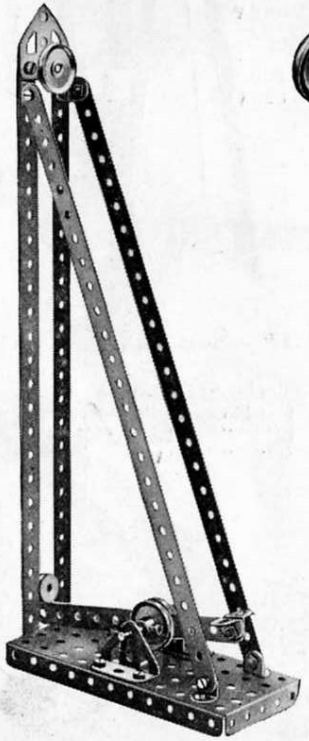


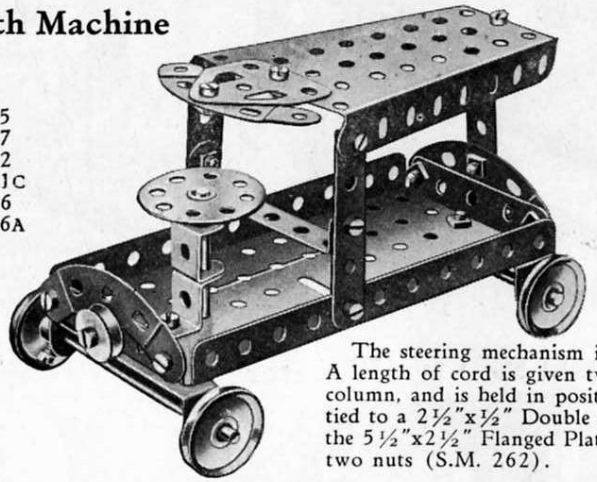
Model No. 1.58

Try Your Strength Machine

Parts required:

4 of No.	1		2 of No.		35
1 " "	2		17 " "		37
6 " "	12		1 " "		52
1 " "	17		1 " "		111C
3 " "	22		2 " "		126
1 " "	23		1 " "		126A





Model No. 1.59 **Motor Van**

Parts required:

2 of No.	5		1 of No.		35
1 " "	11		23 " "		37
5 " "	12		4 " "		48A
2 " "	16		1 " "		52
1 " "	17		1 " "		54
4 " "	22		3 " "		90A
1 " "	23		1 " "		125
1 " "	24		1 " "		126A

The steering mechanism is shown more clearly in Fig. 1.59a. A length of cord is given two or three turns round the steering column, and is held in position by a Spring Clip, its ends being tied to a 2½"x½" Double Angle Strip. The latter is pivoted to the 5½"x2½" Flanged Plate of the van by means of a bolt and two nuts (S.M. 262).

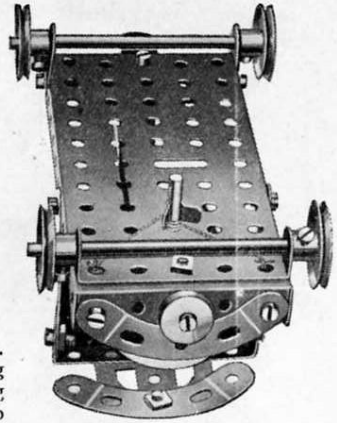


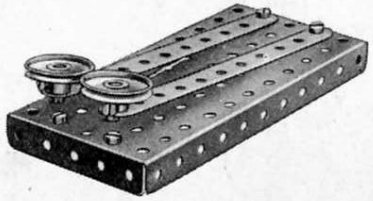
Fig. 1.59a

Model No. 1.60

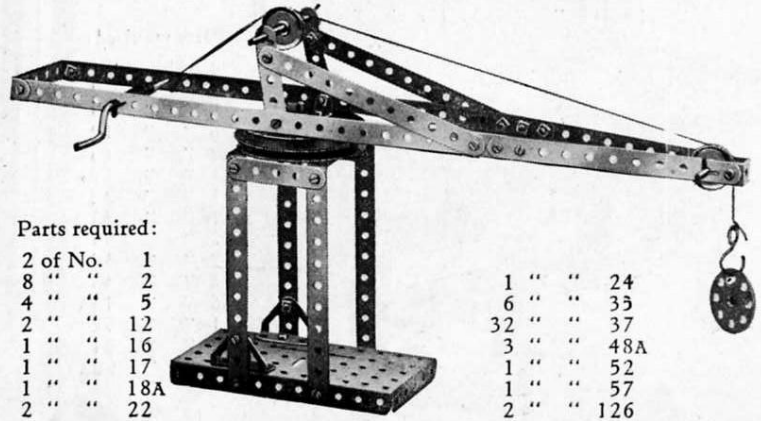
Double Cable Key

Parts required:

2 of No.		2
2 " "		22
4 " "		37
1 " "		52
2 " "		111C



Model No. 1.61 **Revolving Hammerhead Crane**



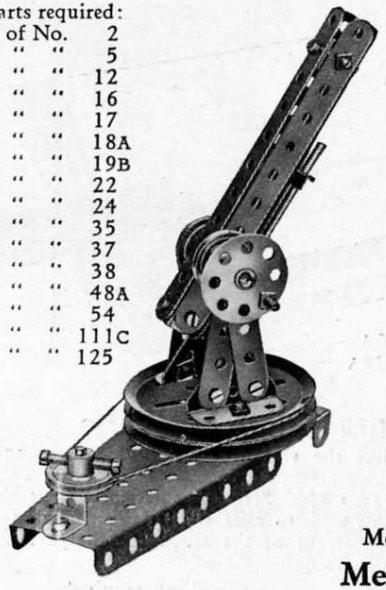
Parts required:

2 of No.	1		1 " "		24
8 " "	2		6 " "		35
4 " "	5		32 " "		37
2 " "	12		3 " "		48A
1 " "	16		1 " "		52
1 " "	17		1 " "		57
1 " "	18A		2 " "		126
2 " "	22				

Model No. 1.62
Anti-Aircraft Gun

Parts required:

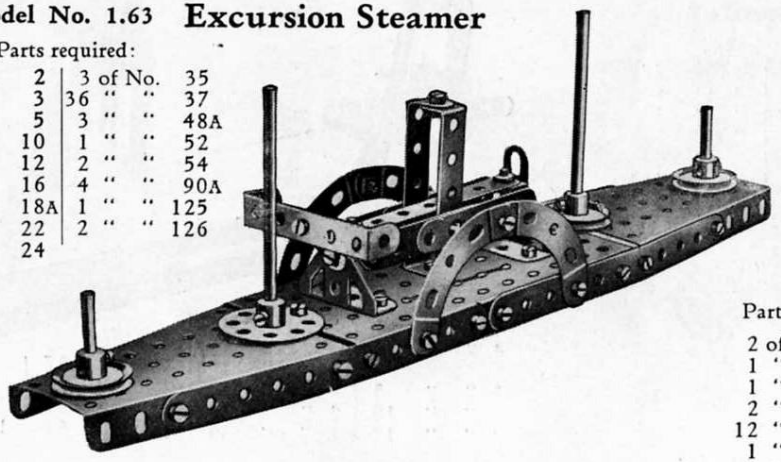
4	of No.	2
4	" "	5
8	" "	12
1	" "	16
1	" "	17
2	" "	18A
2	" "	19B
3	" "	22
1	" "	24
4	" "	35
18	" "	37
2	" "	38
1	" "	48A
1	" "	54
3	" "	111C
1	" "	125



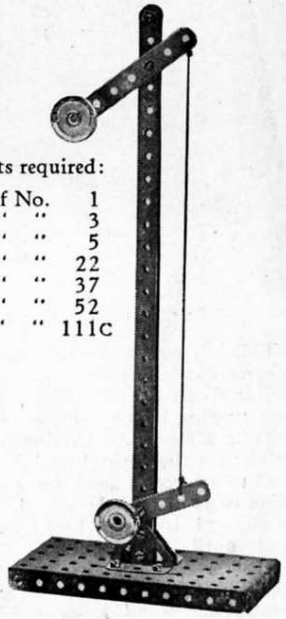
Model No. 1.63
Excursion Steamer

Parts required:

4	of No.	2	3	of No.	35
1	" "	3	36	" "	37
4	" "	5	3	" "	48A
1	" "	10	1	" "	52
2	" "	12	2	" "	54
2	" "	16	4	" "	90A
2	" "	18A	1	" "	125
3	" "	22	2	" "	126
1	" "	24			



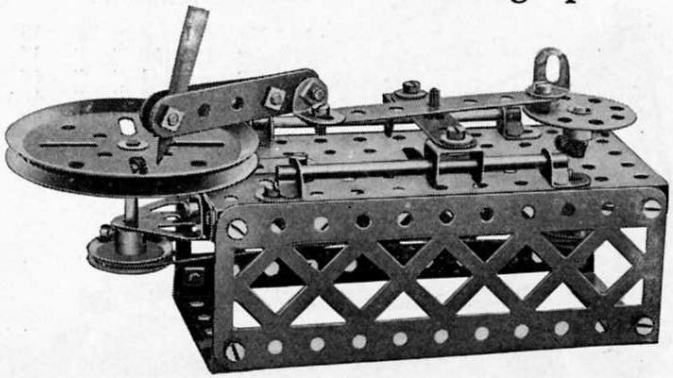
Model No. 1.64
Semaphore Signal



Parts required:

2	of No.	1
1	" "	3
1	" "	5
2	" "	22
12	" "	37
1	" "	52
2	" "	111C

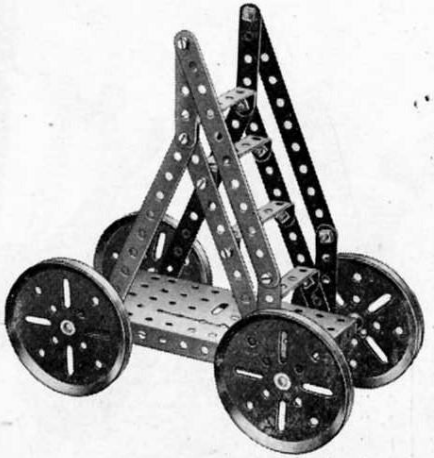
Model No. 1.65
Meccanograph



Parts required:

1	of No.	3
4	" "	5
2	" "	11
6	" "	12
2	" "	16
2	" "	17
1	" "	19B
2	" "	22
1	" "	24
5	" "	35
21	" "	37
2	" "	37A
2	" "	38
2	" "	48A
1	" "	52
2	" "	100
3	" "	111C
2	" "	126

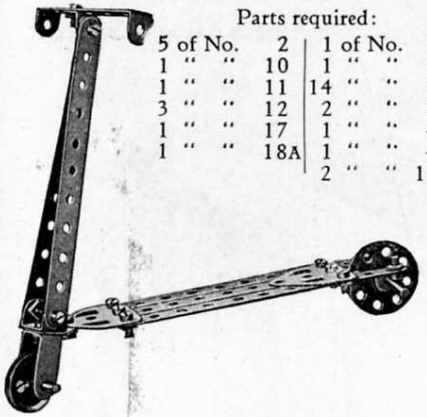
Model No. 1.66
Ladder on Wheels



Parts required:

6	of No.	2
4	" "	5
2	" "	12
4	" "	19B
16	" "	37
8	" "	38
4	" "	48A
1	" "	52

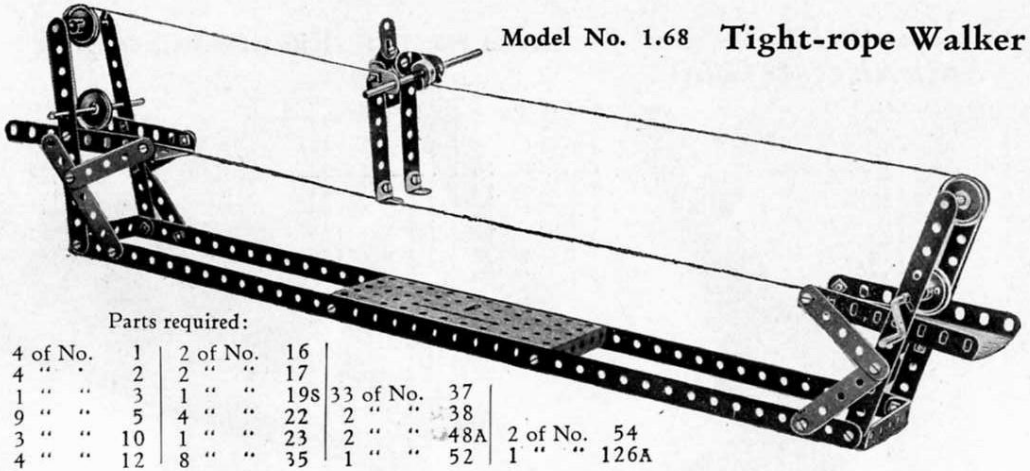
Model No. 1.67 Scooter



Parts required:

5 of No.	2	1 of No.	22
1 " "	10	1 " "	24
1 " "	11	14 " "	37
3 " "	12	2 " "	38
1 " "	17	1 " "	44
1 " "	18A	1 " "	48A
		2 " "	126A

Model No. 1.68 Tight-rope Walker

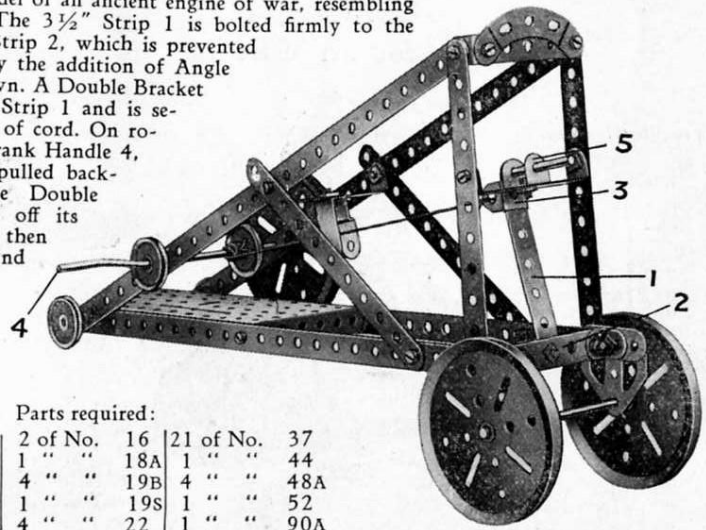


Parts required:

4 of No.	1	2 of No.	16		
4 " "	2	2 " "	17		
1 " "	3	1 " "	19S	33 of No.	37
9 " "	5	4 " "	22	2 " "	38
3 " "	10	1 " "	23	2 " "	48A
4 " "	12	8 " "	35	1 " "	52
				2 of No.	54
				1 " "	126A

Model No. 1.69 Ballista

This is a model of an ancient engine of war, resembling the crossbow. The 3½" Strip 1 is bolted firmly to the Double Angle Strip 2, which is prevented from turning by the addition of Angle Brackets as shown. A Double Bracket 3 slides on the Strip 1 and is secured to a piece of cord. On rotation of the Crank Handle 4, the Strip 1 is pulled backward until the Double Bracket 3 slips off its end. The Strip then flies forward and strikes the missle, which consists of a 2" Rod placed ready in the Double Bracket 5.

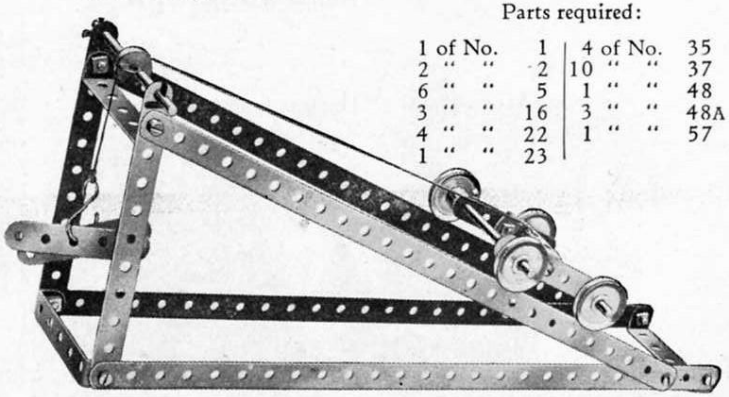


Parts required:

4 of No.	1	2 of No.	16	21 of No.	37
4 " "	2	1 " "	18A	1 " "	44
1 " "	3	4 " "	19B	4 " "	48A
2 " "	11	1 " "	19S	1 " "	52
2 " "	12	4 " "	22	1 " "	90A
				2 " "	126A

Model No. 1.70 Inclined Plane

The inclined plane, like the various systems of pulleys and levers, is a device for making a small force overcome a greater one. Thus the weight of the two 2½" Strips is sufficient to restrain the much heavier truck, or even to raise the latter although for every inch of vertical movement of the truck the Strips must move through two or more inches.



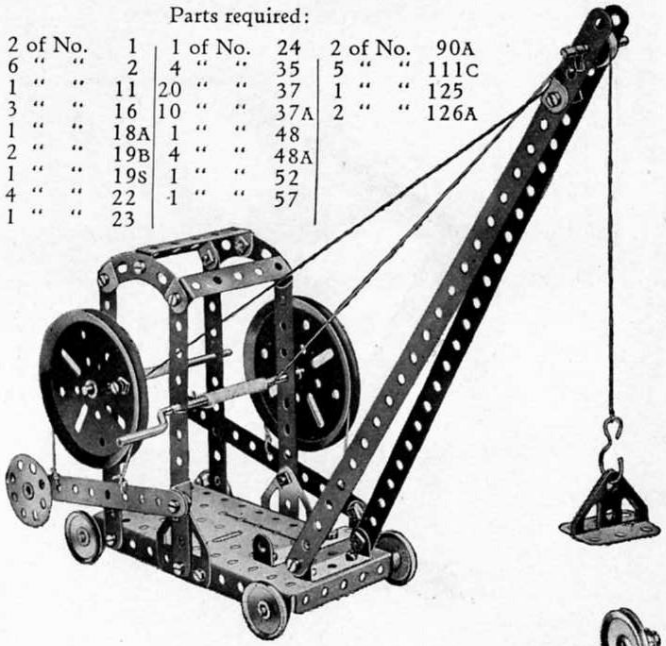
Parts required:

1 of No.	1	4 of No.	35
2 " "	2	10 " "	37
6 " "	5	1 " "	48
3 " "	16	3 " "	48A
4 " "	22	1 " "	57
1 " "	23		

Model No. 1.71 Travelling Crane

Parts required:

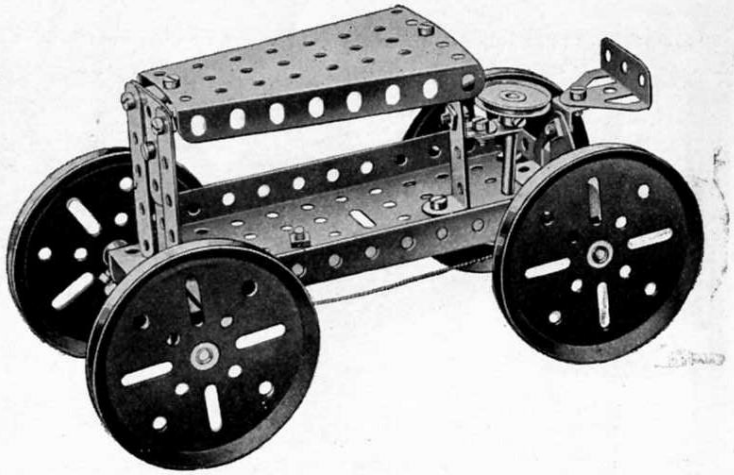
2 of No.	1	1 of No.	24	2 of No.	90A
6 " "	2	4 " "	35	5 " "	111C
1 " "	11	20 " "	37	1 " "	125
3 " "	16	10 " "	37A	2 " "	126A
1 " "	18A	1 " "	48		
2 " "	19B	4 " "	48A		
1 " "	19S	1 " "	52		
4 " "	22	1 " "	57		
1 " "	23				



Model No. 1.72 Motor Tractor

Parts required:

3 of No.	5
1 " "	10
2 " "	12
2 " "	16
1 " "	18A
4 " "	19B
1 " "	22
1 " "	24
15 " "	37
2 " "	37A
6 " "	38
4 " "	48A
1 " "	52
1 " "	54
1 " "	111C
2 " "	126
1 " "	126A



The steering gear is shown in Fig. 1.72a. The front wheels are carried in a 2½"x½" Double Angle Strip 1, which is mounted pivotally by a bolt and two nuts (S.M. 262) to a 2½" Strip 2 secured to the 5½"x2½" Flanged Plate.

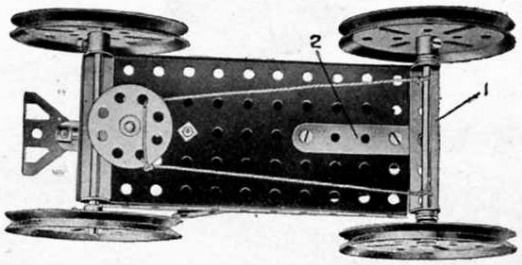
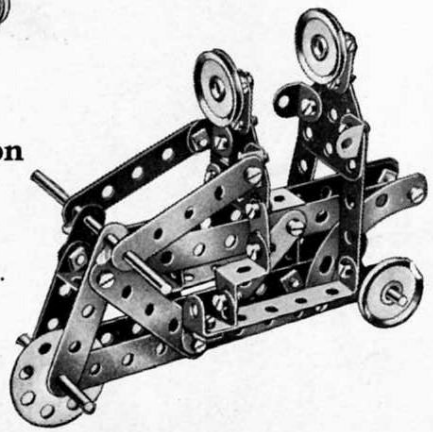


Fig. 1.72A

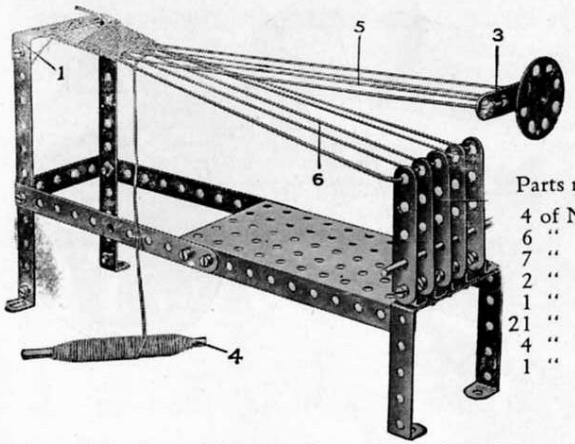
Model No. 1.73 Motor Cyclist and Pillion Rider

Parts required:

4 of No.	2	1 of No	24
9 " "	5	2 " "	35
4 " "	10	30 " "	37
2 " "	11	2 " "	48A
8 " "	12	2 " "	90A
1 " "	16	2 " "	125
2 " "	17	2 " "	126A
4 " "	22		



Model No. 1.74 Hand Loom

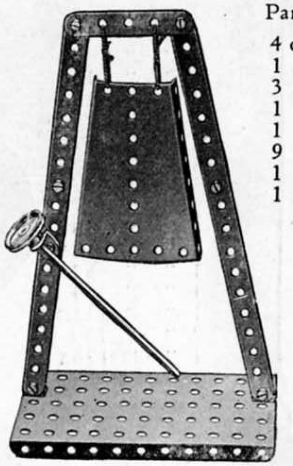


Parts required:

4	of No.	2
6	" "	5
7	" "	12
2	" "	16
1	" "	24
21	" "	37
4	" "	48A
1	" "	52

The warp threads are tied at one end to a Double Angle Strip 1, whilst their other ends are secured alternately to the tops of the upright Strips 2, and the 2½" Strip 3. The "shedding" movement of the warp is obtained by moving the Strip 3 up or down each time the shuttle—a 3½" Rod 4—is passed between the two layers of warp 5 and 6. Wool or similar material is particularly suited to this apparatus. The strands 6 should be kept very taut, and the weft threads may be closed up with the woven portion by means of an ordinary comb each time the shuttle passes.

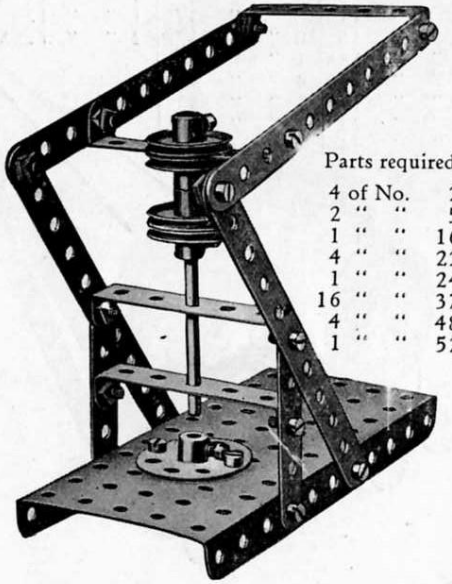
Model No. 1.75 Gong



Parts required:

4	of No.	2
1	" "	5
3	" "	12
1	" "	16
1	" "	22
9	" "	37
1	" "	52
1	" "	54

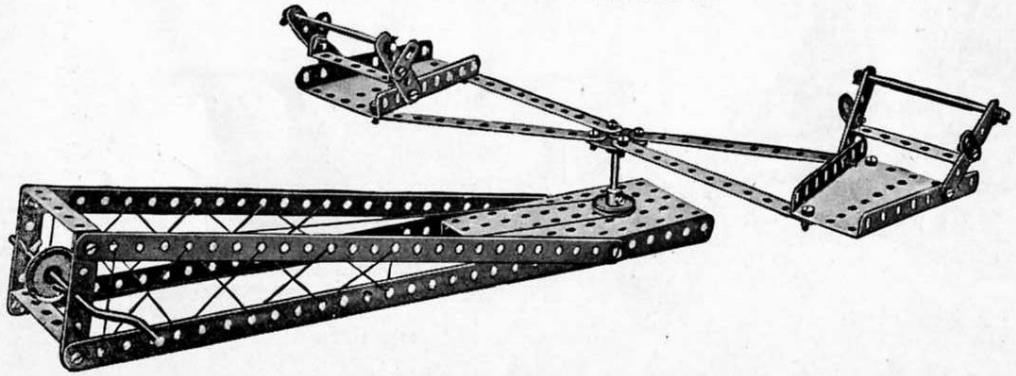
Model No. 1.76 Punching Machine



Parts required:

4	of No.	2
2	" "	5
1	" "	16
4	" "	22
1	" "	24
16	" "	37
4	" "	48A
1	" "	52

Model No. 1.77 Roundabout

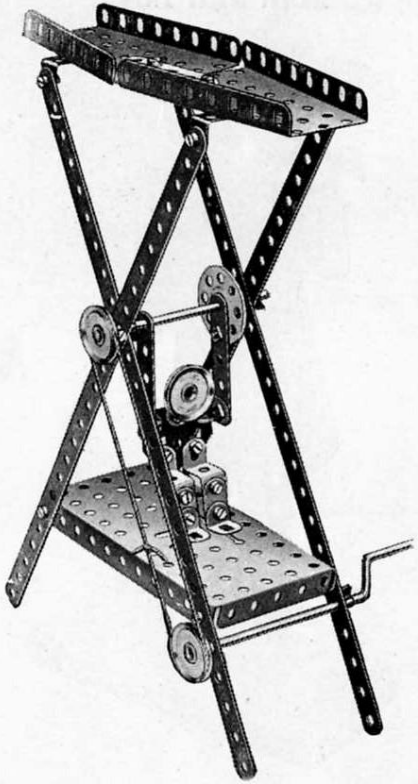


Parts required:

4	of No.	1	1	of No.	17	22	of No.	37
4	" "	2	1	" "	19S	4	" "	48A
6	" "	5	3	" "	22	1	" "	52
4	" "	10	1	" "	24	2	" "	54
2	" "	16	6	" "	35			

The vertical spindle of the Roundabout is secured in place in the base Plate by means of a 1" fast Pulley bolted on either side of the Plate. Washers should be placed beneath these Pulleys in order to obtain freedom of movement.

Model No. 1.78 Revolving Acrobat



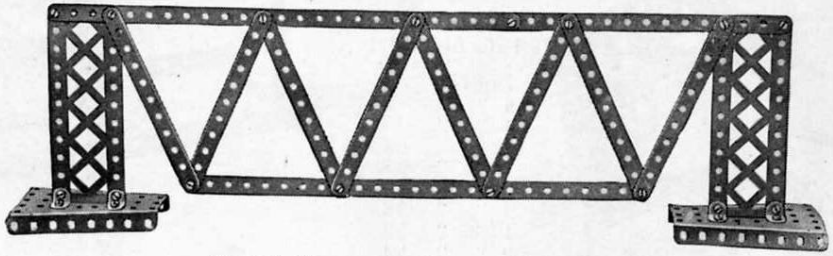
Parts required:

4 of No.	1	3 of No.	35
3 " "	5	24 " "	37
3 " "	10	2 " "	48A
4 " "	12	1 " "	52
1 " "	16	2 " "	54
1 " "	19S	2 " "	125
3 " "	22	1 " "	126A
1 " "	24		

Model No. 1.79 Inverted Truss

Parts required:

3 of No.	1
8 " "	2
4 " "	12
20 " "	37
2 " "	54
2 " "	100



Model No. 1.80 Rake

Parts required:

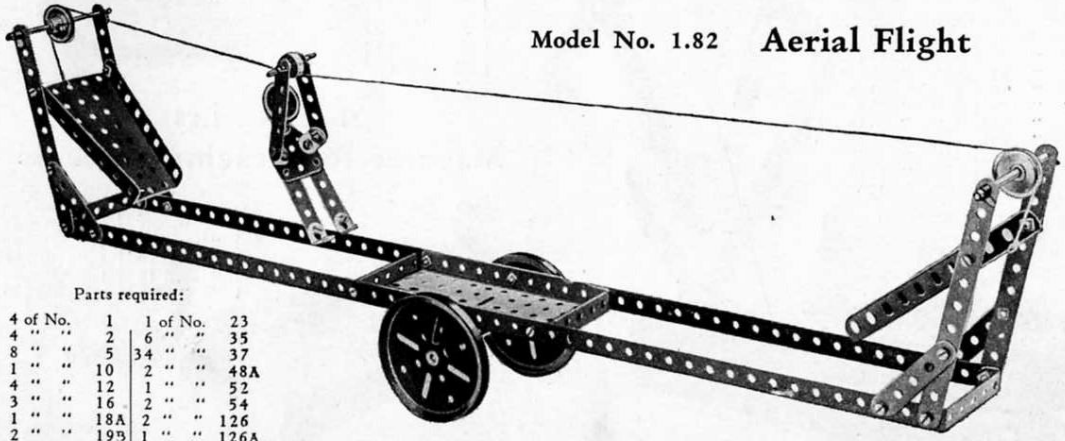
1 of No.	2
1 " "	3
4 " "	10
1 " "	12
6 " "	37

Model No. 1.81 Coat Hanger

Parts required:

1 of No.	1	2 of No.	5	1 of No.	57
2 " "	2	6 " "	37		

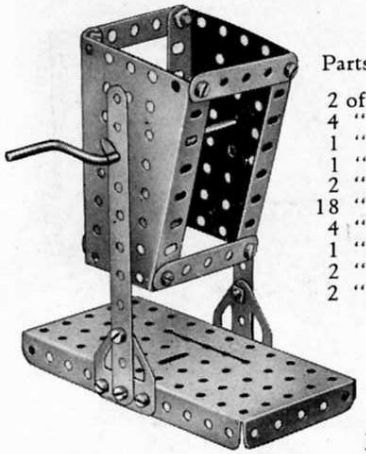
Model No. 1.82 Aerial Flight



Parts required:

4 of No.	1	1 of No.	23
4 " "	2	6 " "	35
8 " "	5	34 " "	37
1 " "	10	2 " "	48A
4 " "	12	1 " "	52
3 " "	16	2 " "	54
1 " "	18A	2 " "	126
2 " "	19B	1 " "	126A
3 " "	22		

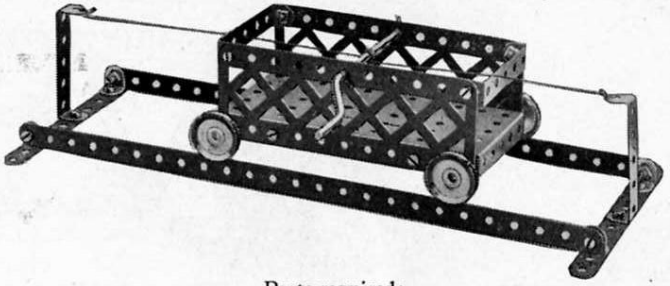
Model No. 1.83 Butter Churn



Parts required:

2	of No.	2
4	" "	5
1	" "	19S
1	" "	24
2	" "	35
18	" "	37
4	" "	38
1	" "	52
2	" "	54
2	" "	126

Model No. 1.84 Cable Railway



Parts required:

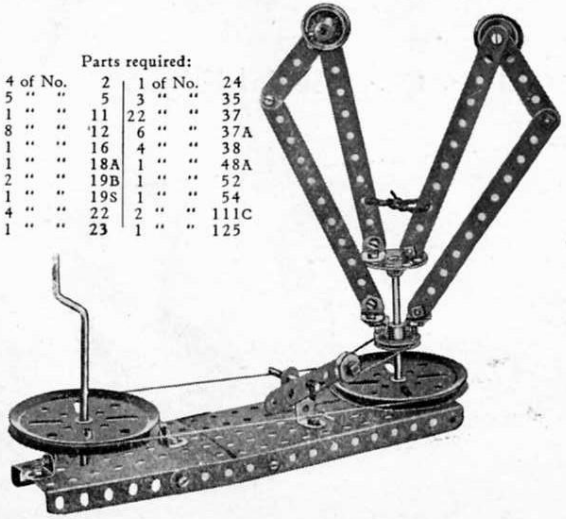
2	of No.	1	1	of No.	19S	4	of No.	48A
2	" "	2	4	" "	22	1	" "	52
4	" "	12	2	" "	35	2	" "	100
2	" "	16	18	" "	37			

Model No. 1.85 Man and Boy

Parts required:

4	of No.	2	1	of No.	24
1	" "	3	26	" "	37
1	" "	5	1	" "	52
5	" "	10	2	" "	54
1	" "	11	1	" "	90A
8	" "	12	2	" "	125
1	" "	22	1	" "	126A

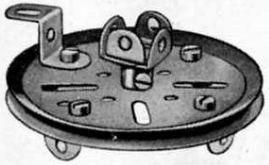
Model No. 1.86 Inverted Centrifugal Governor



Parts required:

4	of No.	2	1	of No.	24
5	" "	5	3	" "	35
1	" "	11	22	" "	37
8	" "	12	6	" "	37A
1	" "	16	4	" "	38
1	" "	18A	1	" "	48A
2	" "	19B	1	" "	52
1	" "	19S	1	" "	54
4	" "	22	2	" "	111C
1	" "	23	1	" "	125

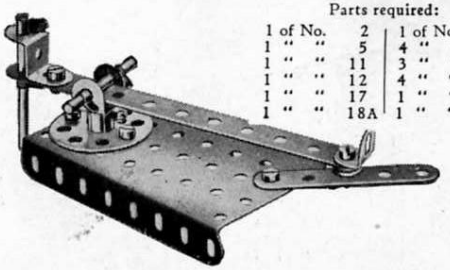
Model No. 1.87 Candle Stick



Parts required:

2	of No.	11
4	" "	12
1	" "	19B
4	" "	37
1	" "	111C
1	" "	125

Model No. 1.88 Machine for Tracing a Locus



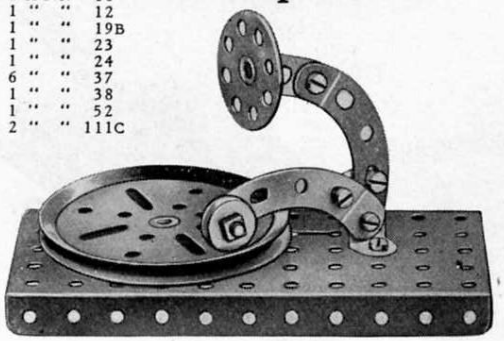
Parts required:

1	of No.	2	1	of No.	24
1	" "	5	4	" "	35
1	" "	11	3	" "	37
1	" "	12	4	" "	38
1	" "	17	1	" "	54
1	" "	18A	1	" "	125

Model No. 1.89 Gramophone

Parts required:

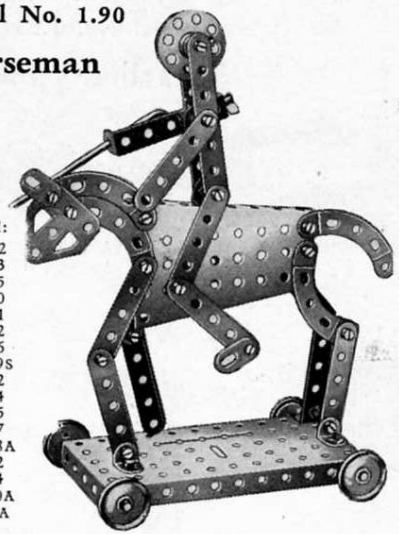
2	of No.	10
1	" "	12
1	" "	19B
1	" "	23
1	" "	24
6	" "	37
1	" "	38
1	" "	52
2	" "	111C



Model No. 1.90 Horseman

Parts required:

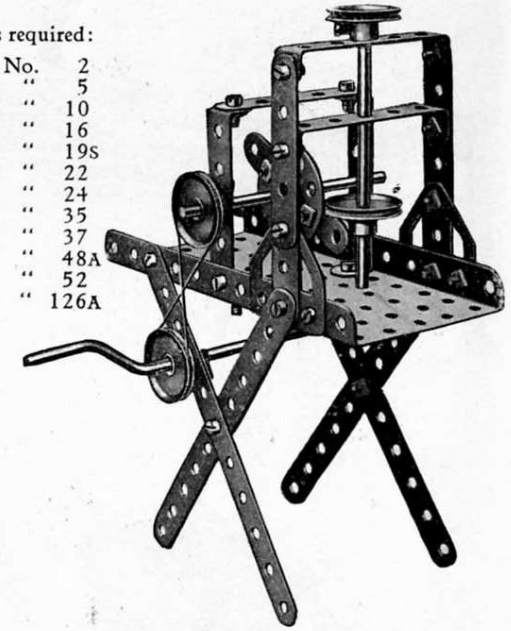
1	of No.	2
1	" "	3
9	" "	5
2	" "	10
2	" "	11
5	" "	12
2	" "	16
1	" "	19S
4	" "	22
1	" "	24
1	" "	35
27	" "	37
1	" "	48A
1	" "	52
1	" "	54
4	" "	90A
1	" "	126A



Model No. 1.91 Stamping Machine

Parts required:

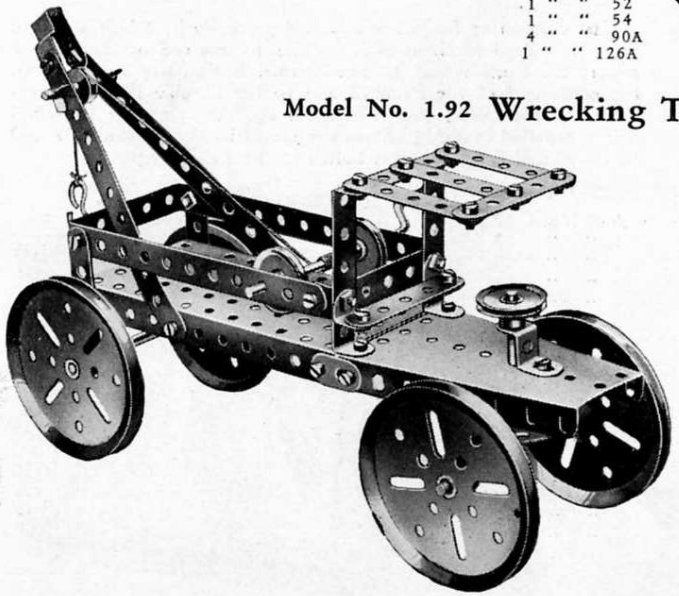
4	of No.	2
4	" "	5
2	" "	10
2	" "	16
1	" "	19S
4	" "	22
1	" "	24
2	" "	35
22	" "	37
4	" "	48A
1	" "	52
2	" "	126A



Model No. 1.92 Wrecking Truck

Parts required:

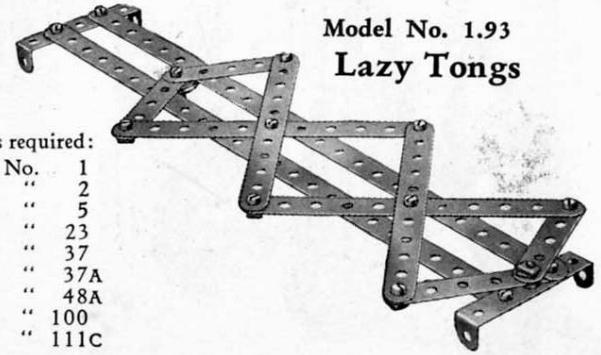
4	of No.	2
8	" "	5
2	" "	10
2	" "	12
2	" "	16
1	" "	17
1	" "	18A
1	" "	19S
3	" "	22
1	" "	23
1	" "	24
3	" "	35
29	" "	37
1	" "	44
5	" "	48A
1	" "	52
1	" "	54
1	" "	57
2	" "	125
4	" "	126



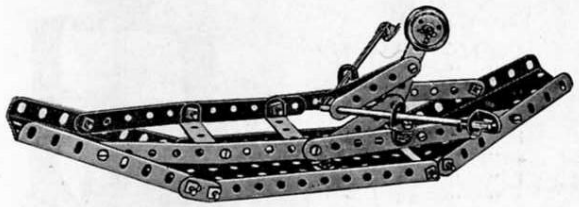
Model No. 1.93 Lazy Tongs

Parts required:

2	of No.	1
4	" "	2
4	" "	5
1	" "	23
12	" "	37
12	" "	37A
2	" "	48A
1	" "	100
2	" "	111C



Model No. 1.94 Rowing Boat



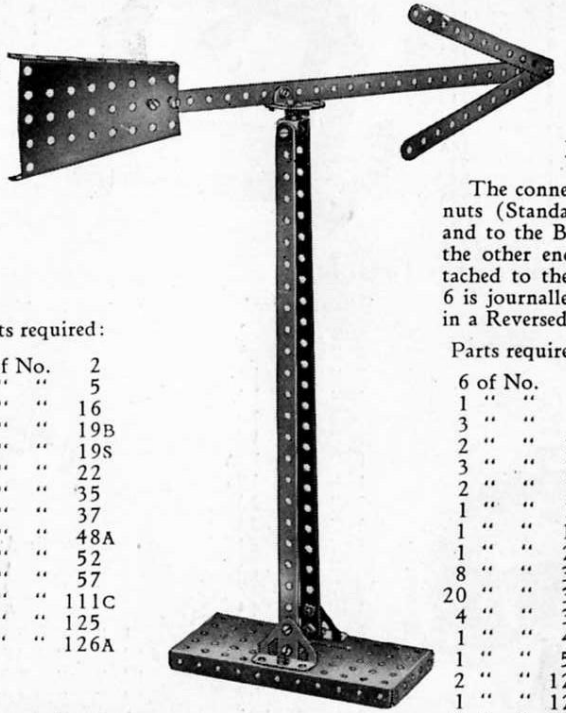
Parts required:

4 of No.	2	2 of No.	16	24 of No.	37
5 " "	5	1 " "	18A	4 " "	38
4 " "	10	2 " "	22A	3 " "	48A
7 " "	12	4 " "	35	1 " "	52
		2 of No.	54		

Model No. 1.95 Weather Vane

Parts required:

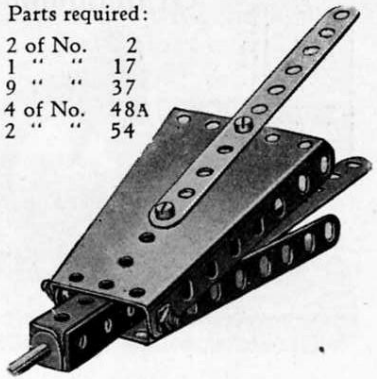
3 of No.	1	1 of No.	24	1 of No.	111C
2 " "	2	14 " "	37	2 " "	126
1 " "	11	1 " "	52		
2 " "	12	1 " "	54		



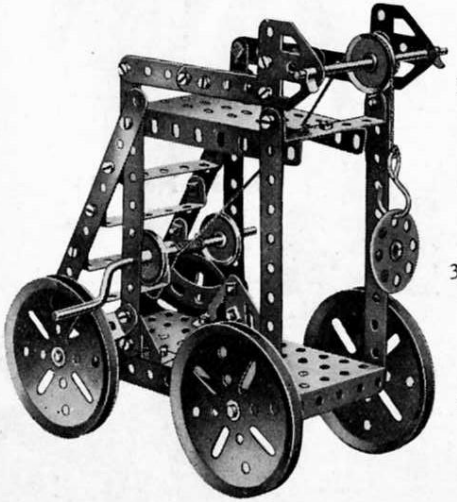
Model No. 1.96 Bellows

Parts required:

2 of No.	2
1 " "	17
9 " "	37
4 of No.	48A
2 " "	54



Model No. 1.97 Tower Wagon



Parts required:

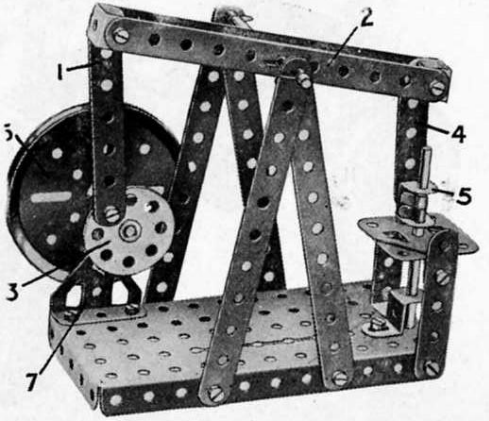
6 of No.	2
6 " "	5
3 " "	16
4 " "	19B
1 " "	19S
3 " "	22
2 " "	35
33 " "	37
5 " "	48A
1 " "	52
1 " "	57
1 " "	111C
1 " "	125
2 " "	126A

Model No. 1.98 Beam Engine

The connecting Strip 1 is attached pivotally by a bolt and two nuts (Standard Mechanism No. 262) to one end of the beam 2 and to the Bush Wheel 3. The Strip 4 is similarly connected to the other end of the Beam 2 and to the Double Bracket 5 attached to the piston rod. The short Rod carrying the Flywheel 6 is journalled in a 2½" Strip supported by the Trunnion 7 and in a Reversed Angle Bracket bolted to the 2½" Strip.

Parts required:

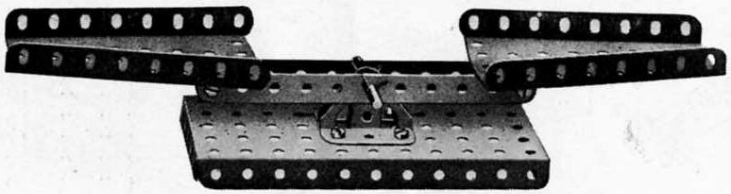
6 of No.	2
1 " "	3
3 " "	5
2 " "	11
3 " "	12
2 " "	16
1 " "	17
1 " "	19B
1 " "	24
8 " "	35
20 " "	37
4 " "	37A
1 " "	48
1 " "	52
2 " "	125
1 " "	126
2 " "	126A



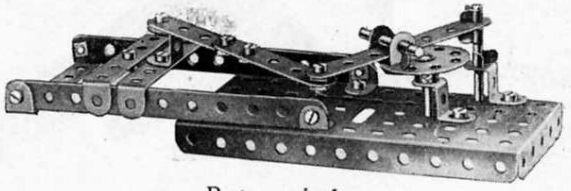
Model No. 1.99 Scales

Parts required:

2 of No.	2	1 of No.	18A	8 of No.	37	1 of No.	54
2 " "	12	2 " "	35	1 " "	52	2 " "	126



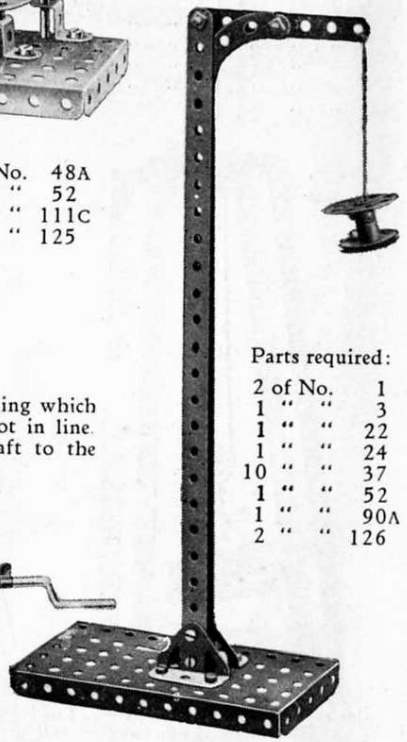
Model No. 1.100 Quick Return Device



Parts required:

2 of No.	2	1 of No.	17	3 of No.	48A
1 " "	3	2 " "	18A	1 " "	52
2 " "	5	1 " "	24	3 " "	111C
2 " "	11	6 " "	35	2 " "	125
2 " "	12	15 " "	37		

Model No. 1.101 Arc Lamp

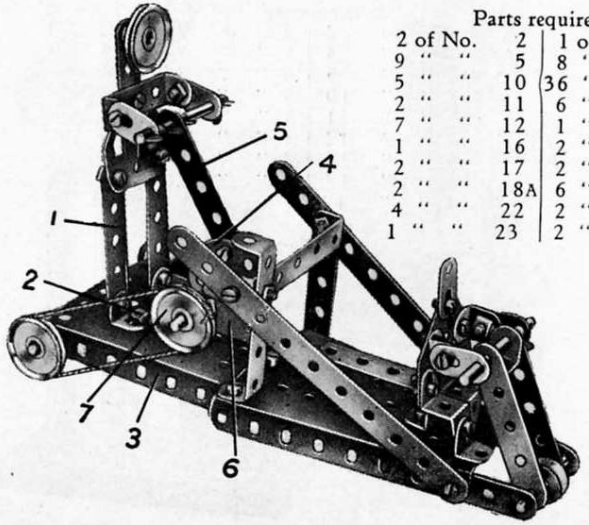


Parts required:

2 of No.	1
1 " "	3
1 " "	22
1 " "	24
10 " "	37
1 " "	52
1 " "	90A
2 " "	126

Model No. 1.102 Coaster

The figure 1 is loosely attached by lock-nutted bolts 2 to the Sector Plate 3 and is connected to the Bush Wheel 4 by the pivotally-attached 2½" Strip 5. The 1½" Rod carrying the Bush Wheel 4 is journalled in the Cranked Bent Strip 6, the 1" fast Pulley 7 being connected to the road wheel by a cord as shown.

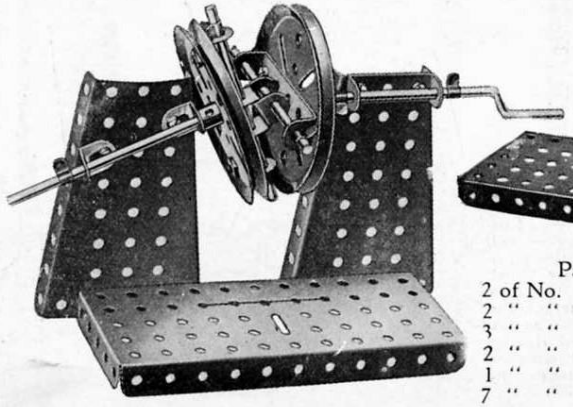


Parts required:

2 of No.	2	1 of No.	24
9 " "	5	8 " "	35
5 " "	10	36 " "	37
2 " "	11	6 " "	37A
7 " "	12	1 " "	48
1 " "	16	2 " "	48A
2 " "	17	2 " "	54
2 " "	18A	6 " "	111C
4 " "	22	2 " "	125
1 " "	23	2 " "	126A

Model No. 1.103 Hook's Coupling

This is a useful type of universal coupling which may be used to connect shafts that are not in line. It will transmit the rotation of one shaft to the other smoothly and steadily.



Parts required:

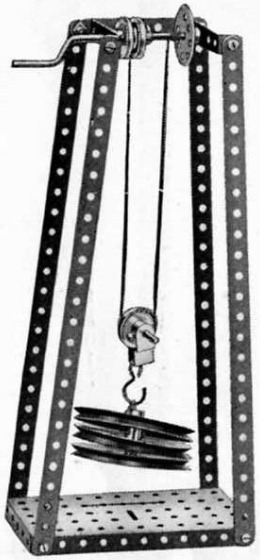
2 of No.	11	12 of No.	37
2 " "	12	1 " "	48
3 " "	16	2 " "	48A
2 " "	19B	1 " "	52
1 " "	19S	2 " "	54
7 " "	35		

Model No. 1.104

Chinese Windlass

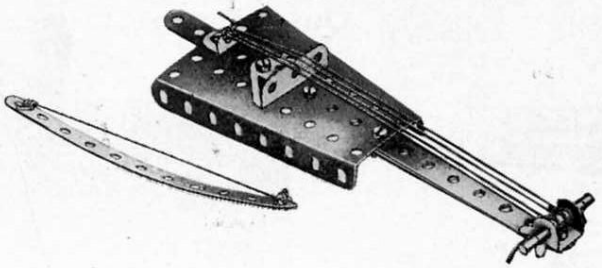
Parts required:

4	of No.	1	1	of No.	24
1	" "	3	8	" "	37
1	" "	18A	1	" "	44
3	" "	22	2	" "	48A
3	" "	19B	1	" "	52
1	" "	19S	1	" "	57
1	" "	23			



One end of the hoisting cord is wound on the shaft of the Crank Handle, the other end being wound in the opposite direction on a drum formed of a ½" loose Pulley Wheel clamped tightly between two 1" fast Pulleys. When the Crank Handle is turned, the cord is hauled in by the ½" Pulley and at the same time paid out by the Crank Handle, but owing to the difference in diameter of the ½" Pulley and the Crank Handle, the load on the Hook is gradually raised.

Model No. 1.105 **Violin and Bow**



Parts required:

4	of No.	2
1	" "	5
1	" "	11
1	" "	12
1	" "	18A
2	" "	35
5	" "	37
1	" "	54
1	" "	126

Model No. 1.106 **Bed Table**

Parts required:

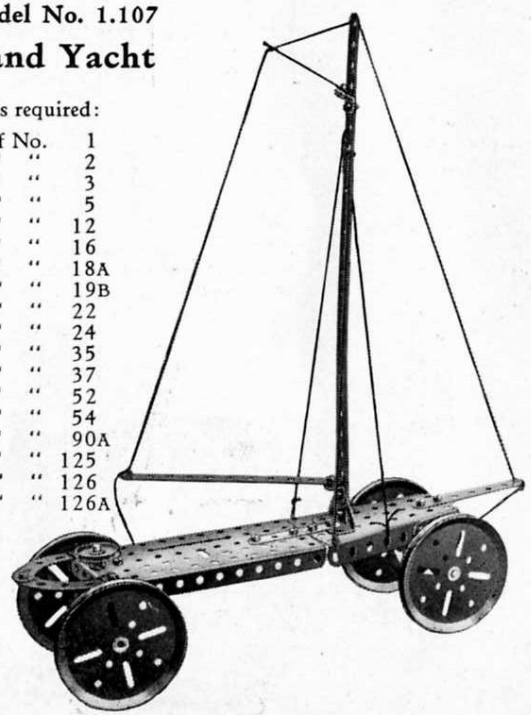
3	of No.	2
1	" "	3
1	" "	5
1	" "	11
5	" "	12
2	" "	16
1	" "	17
4	" "	22
1	" "	24
21	" "	37
4	" "	48A
1	" "	52
1	" "	126A

Model No. 1.107

Sand Yacht

Parts required:

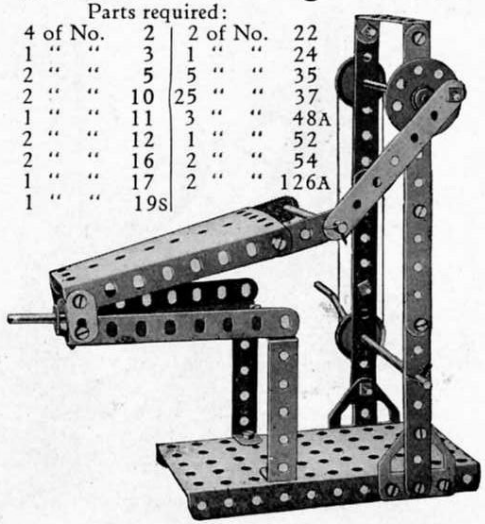
1	of No.	1
1	" "	2
1	" "	3
2	" "	5
2	" "	12
2	" "	16
1	" "	18A
4	" "	19B
1	" "	22
1	" "	24
4	" "	35
23	" "	37
1	" "	52
1	" "	54
2	" "	90A
1	" "	125
1	" "	126
2	" "	126A



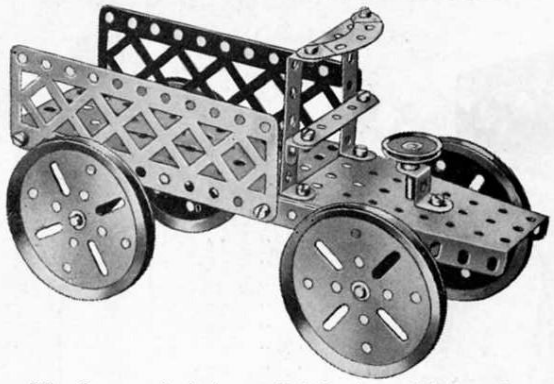
Model No. 1.108 **Forge Bellows**

Parts required:

4	of No.	2	2	of No.	22
1	" "	3	1	" "	24
2	" "	5	5	" "	35
2	" "	10	25	" "	37
1	" "	11	3	" "	48A
2	" "	12	1	" "	52
2	" "	16	2	" "	54
1	" "	17	2	" "	126A
1	" "	19S			



Model No. 1.109 Motor Truck



The front axle is journalled in the end holes of a 2½"x½" Double Angle Strip that is bolted to the face of a Bush Wheel. The latter is secured to the steering column (a 2" Rod), which is journalled in two Reversed Angle Brackets bolted to opposite sides of the Sector Plate.

Parts required:

2	of No.	2
2	" "	5
2	" "	12
2	" "	16
2	" "	18A
4	" "	19B
1	" "	22
1	" "	24
25	" "	37
2	" "	37A
2	" "	38
3	" "	48A
1	" "	52
1	" "	54
1	" "	90A
2	" "	100
1	" "	111C
2	" "	125
2	" "	126A

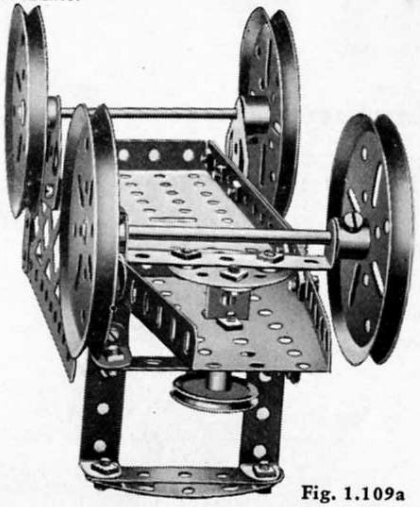
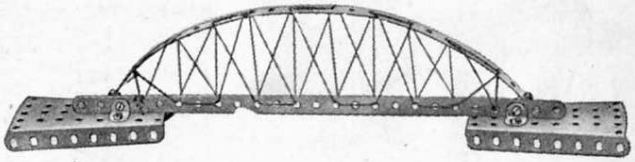


Fig. 1.109a

Model No. 1.110 Bow Girder

Parts required:

2	of No.	1
4	" "	12
6	" "	37
2	" "	54

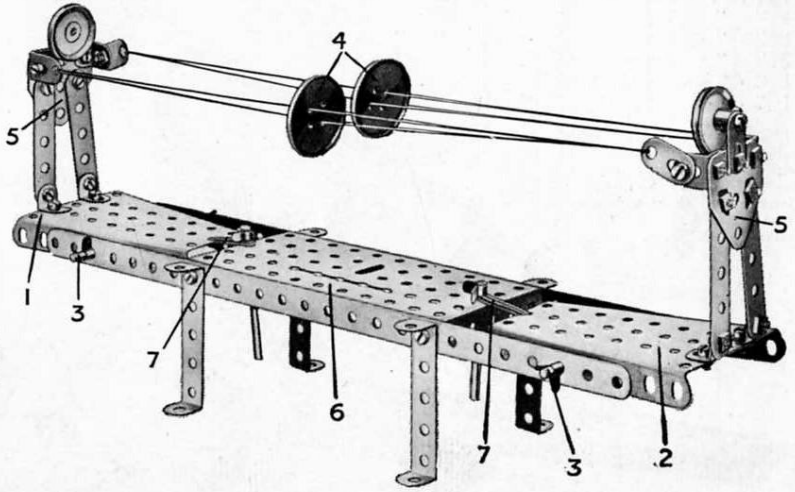


Model No. 1.111 Spinning Buttons

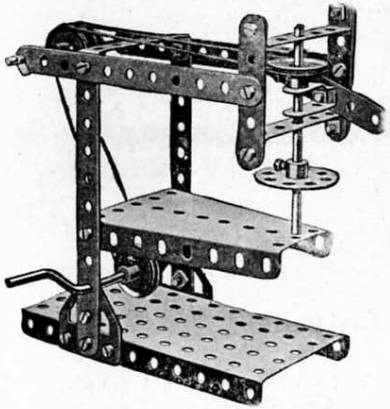
The Sector Plates 1 and 2 are mounted pivotally on the Rods 3. Two large buttons 4 are placed on lengths of thread or thin elastic stretched between the arms of the Meccanitians 5. Start the model as follows: twist the threads a little with your fingers, pull the Meccanitians outward, then release them sharply. As soon as the buttons are spinning a slight downward touch on the feet of each Meccanitian is sufficient to keep them going. The ends of the Sector Plates 1 and 2 are connected to the Flanged Plate 6 by means of pieces of elastic 7.

Parts required:

2	of No.	1
6	" "	5
4	" "	10
8	" "	12
2	" "	16
2	" "	17
2	" "	22
6	" "	35
28	" "	37
4	" "	48A
2	" "	111C
2	" "	126A



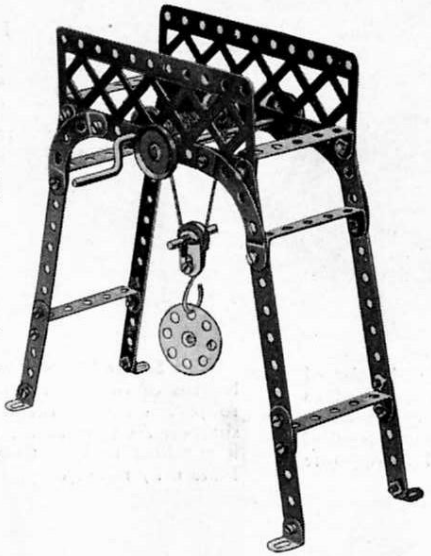
Model No. 1.112 Drilling Machine



Parts required:

4	of No.	2
3	" "	5
1	" "	11
2	" "	16
1	" "	19S
4	" "	22
1	" "	24
4	" "	35
19	" "	37
1	" "	44
3	" "	48A
1	" "	52
1	" "	54
2	" "	126A

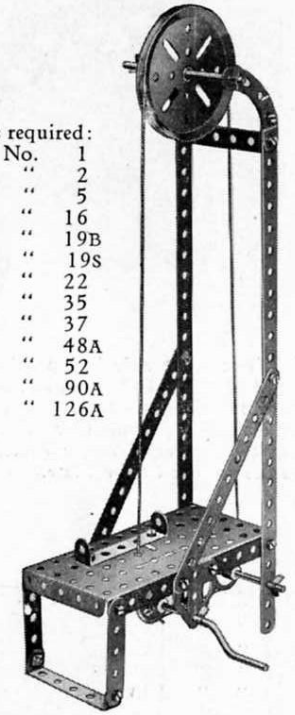
Model No. 1.113 Overhead Crane



Parts required:

4	of No.	2
4	" "	5
2	" "	10
4	" "	12
1	" "	16
1	" "	18A
1	" "	19S
4	" "	22
1	" "	23
2	" "	35
25	" "	37
1	" "	38
6	" "	48A
1	" "	57
4	" "	90A
2	" "	100

Model No. 1.114 Band Saw



Parts required:

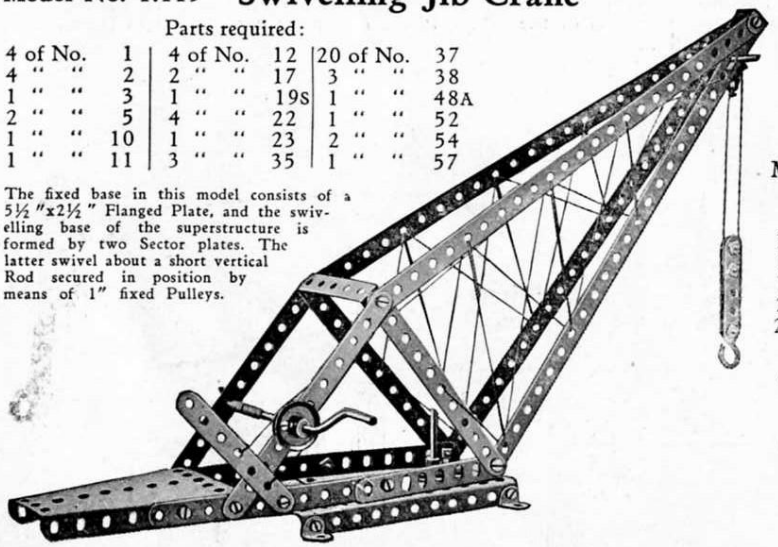
2	of No.	1
2	" "	2
2	" "	5
2	" "	16
1	" "	19B
1	" "	19S
2	" "	22
6	" "	35
18	" "	37
3	" "	48A
1	" "	52
2	" "	90A
2	" "	126A

Model No. 1.115 Swivelling Jib Crane

Parts required:

4	of No.	1	4	of No.	12	20	of No.	37
4	" "	2	2	" "	17	3	" "	38
1	" "	3	1	" "	19S	1	" "	48A
2	" "	5	4	" "	22	1	" "	52
1	" "	10	1	" "	23	2	" "	54
1	" "	11	3	" "	35	1	" "	57

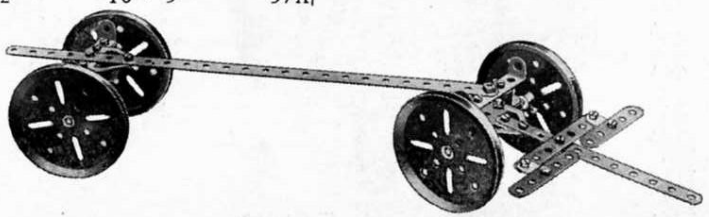
The fixed base in this model consists of a 5½"x2½" Flanged Plate, and the swivelling base of the superstructure is formed by two Sector plates. The latter swivel about a short vertical Rod secured in position by means of 1" fixed Pulleys.



Model No. 1.116 Lumber Carrier

Parts required:

1	of No.	1	2	of No.	11	4	of No.	48A
1	" "	2	2	" "	16	3	" "	111C
1	" "	3	4	" "	19B	2	" "	125
2	" "	5	19	" "	37	2	" "	126A
2	" "	10	3	" "	37A			



Model No. 1.117

Bow and Arrow

Parts required:

1 of No. 1 1 of No. 16

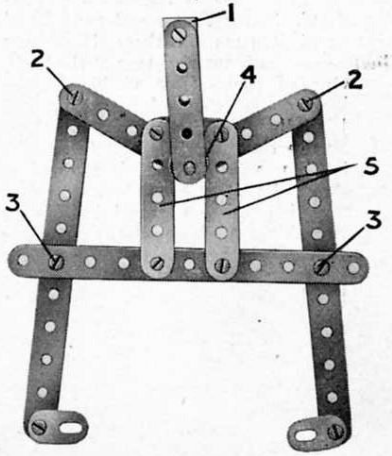
Model No. 1.118

Friction Grip for Cranes

The hoisting cord is attached to the Double Bracket 1. The joints 2, 3 are lock-nutted, so that when the grip is raised the ½" loose Pulley Wheel 4 slides upward between the 2½" Strips 5, and the grip closes upon the block of wood or other material placed between its jaws.

Parts required:

3 of No.	2	1 of No.	22
8 " "	5	2 " "	35
4 " "	10	12 " "	37
1 " "	11		

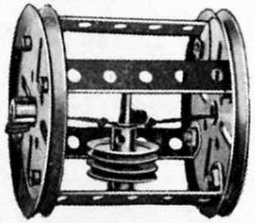


Model No. 1.119

Cum Bak

Parts required:

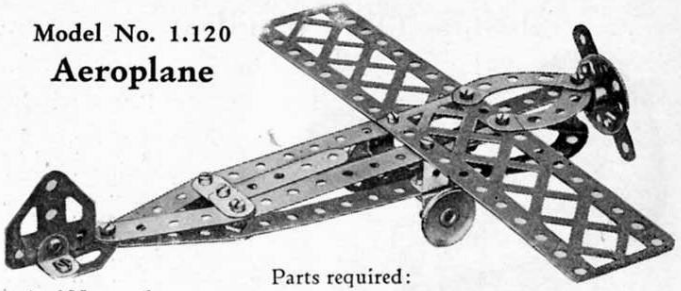
1 of No.	18A
2 " "	19B
2 " "	22
1 " "	23
1 " "	35
8 " "	37
4 " "	48A



A short length of elastic is doubled and stretched between the centres of the 3" Pulley Wheels. A weight, consisting of two 1" fast Pulley Wheels and a 1½" Rod, is suspended from it in the middle of the drum. When the Cum Bak is rolled along any smooth level surface, the elastic becomes twisted and stores up sufficient energy to return the drum to its starting point. If the mechanism is concealed by a thin cardboard covering, the model will cause much amusement by its mystifying behaviour.

Model No. 1.120

Aeroplane



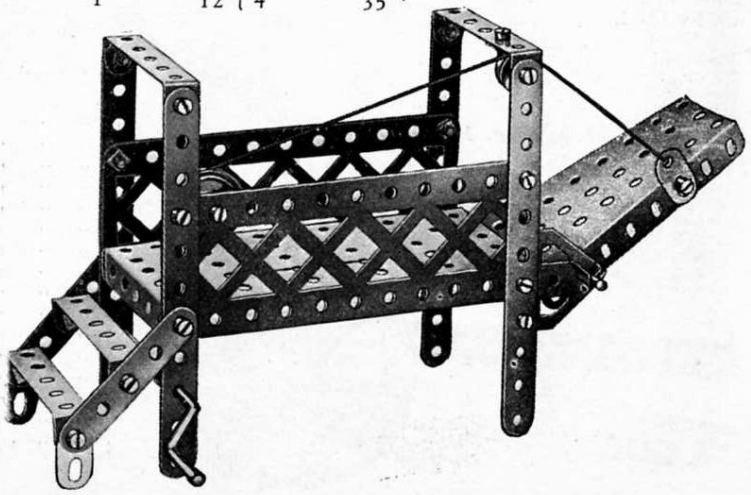
Parts required:

4 of No.	1	4 of No.	10	1 of No.	17	30 of No.	37
2 " "	2	1 " "	11	2 " "	22	2 " "	100
1 " "	3	8 " "	12	1 " "	24	2 " "	125
4 " "	5	1 " "	16	1 " "	35	2 " "	126
						2 " "	126A

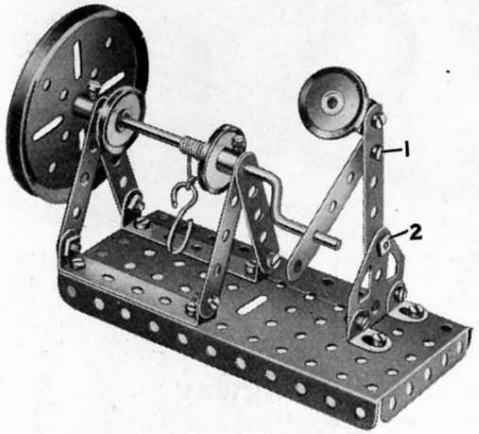
Model No. 1.121 **Gangway**

Parts required:

4 of No.	2	1 of No.	16	22 of No.	37	1 of No.	54
2 " "	5	1 " "	22	4 " "	48A	2 " "	100
3 " "	10	1 " "	23	1 " "	52	2 " "	126A
1 " "	12	4 " "	35				



Model No. 1.122 Windlass

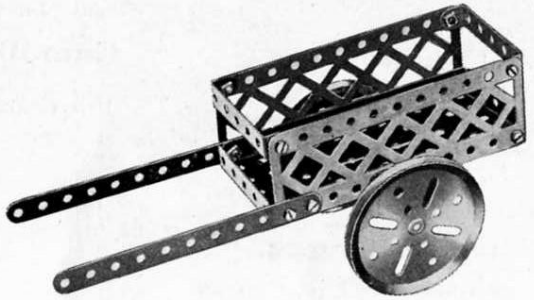


Parts required:

6	of No.	5
3	" "	12
1	" "	19B
1	" "	19S
3	" "	22
13	" "	37
5	" "	37A
2	" "	48A
1	" "	52
1	" "	57
3	" "	111C
1	" "	126A

The figure at the right of the model is arranged to work to and fro when the Crank Handle is rotated. The Bolts 1 and 2 are both secured by two nuts as in Standard Mechanism No. 262.

Model No. 1.123 Cart



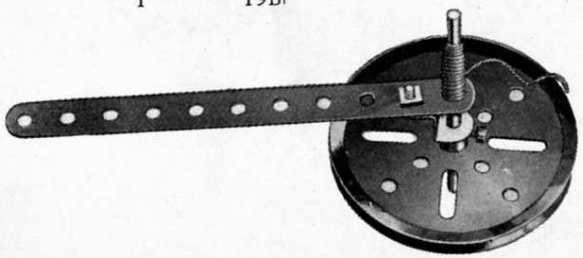
Parts required:

2	of No.	2
1	" "	16
2	" "	19B
14	" "	37
4	" "	48A
1	" "	52
2	" "	100
2	" "	126A

Model No. 1.124 Top

Parts required:

1	of No.	2	1	of No.	37
1	" "	16	1	" "	125
1	" "	19B			

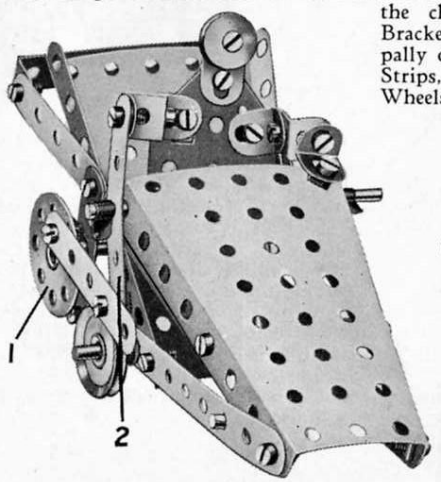


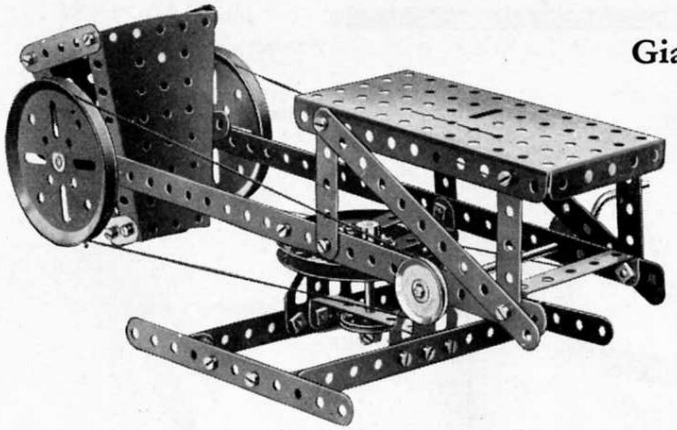
Model No. 1.125 The Invalid

When wheeled along the table the 'invalid" appears to push himself energetically along. His neck is a Flat Bracket; his right (or propelling) arm consists of one Angle Bracket and one ½" Reversed Angle Bracket, and his left arm—the hand of which is bolted loosely to the chair—is formed by three Angle Brackets. The chair is composed principally of two Sector Plates and four 5½" Strips, and it runs on three 1" Pulley Wheels—one in front and two at the back. One of these (not visible in the illustration) drives by cord another 1" Pulley Wheel, the shaft of which also carries a Bush Wheel 1. As will be seen, a 2½" Strip is pivoted at one end to this Bush Wheel and at the other end to a second 2½" Strip 2, which, rocking about an Axle journalled through its centre hole, is again pivoted to the invalid's hand.

Parts required:

4	of No.	2
6	" "	5
1	" "	10
4	" "	12
3	" "	16
1	" "	17
4	" "	22
1	" "	23
1	" "	24
4	" "	35
24	" "	37
4	" "	37A
3	" "	38
2	" "	48A
2	" "	54
1	" "	125
1	" "	126A





Model No. 1.126
Giant Foundry Ladle

Parts required:

2 of No.	1		1 of No.	23
6 " "	2		1 " "	24
7 " "	5		36 " "	37
2 " "	10		6 " "	37A
1 " "	16		4 " "	48A
1 " "	17		1 " "	52
3 " "	19B		2 " "	54
1 " "	19S		6 " "	111C
3 " "	22		2 " "	125

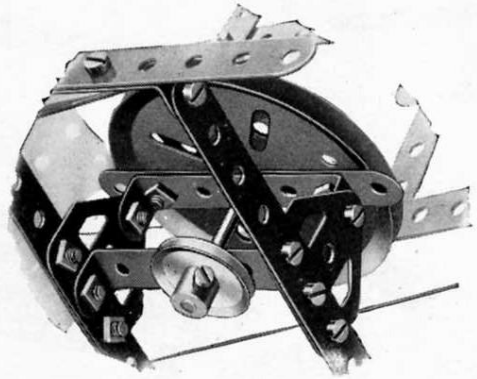
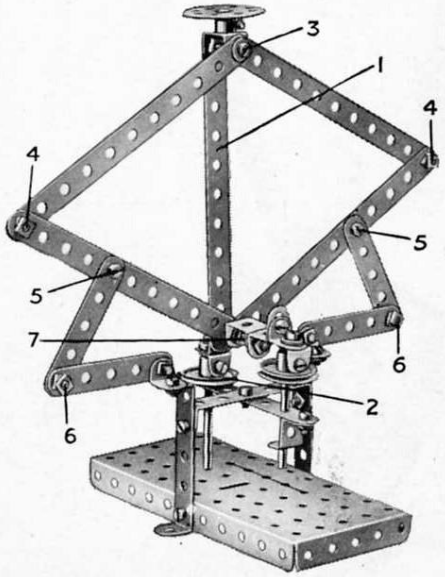


Fig. 1.126a

Model No. 1.127 Double Action Pump

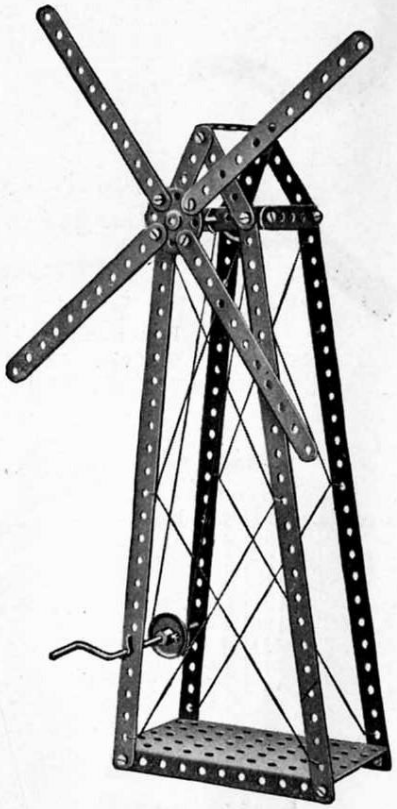


Parts Required:

5 of No.	2	
1 " "	3	
4 " "	5	
2 " "	11	
6 " "	12	
2 " "	17	
2 " "	22	
1 " "	24	
14 " "	37	
6 " "	37A	
4 " "	38	
3 " "	48A	
1 " "	52	
6 " "	111C	
2 " "	125	

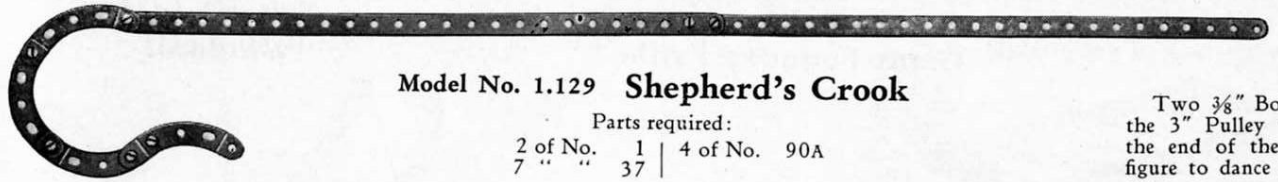
The 5½" Strip 1 is attached to the 1" Pulley Wheel 2 by means of two Angle Brackets, through the lower of which passes the set-screw that secures the Pulley to its 2" Rod. Two washers are placed beneath the head of the bolt joining the Angle Brackets in order to prevent its shank from binding on the boss of the Pulley 2. The joints 3, 4, 5, 6, 7, are all lock-nutted, the remainder of the joints being quite rigid. When the Strip 1 descends, together with the first pump, the incidental distortion of the parallelogram 3, 4, 7, 4 causes the second pump to rise. Similarly, when the first pump rises, the second descends.

Model No. 1.128
Windmill



Parts required:

4 of No.	1		2 of No.	22
4 " "	2		1 " "	24
7 " "	5		4 " "	35
2 " "	12		20 " "	37
1 " "	16		3 " "	48A
1 " "	19S		1 " "	52



Model No. 1.129 Shepherd's Crook

Parts required:

2 of No.	1	4 of No.	90A
7 " "	37		

Model No. 1.130 Large Rake

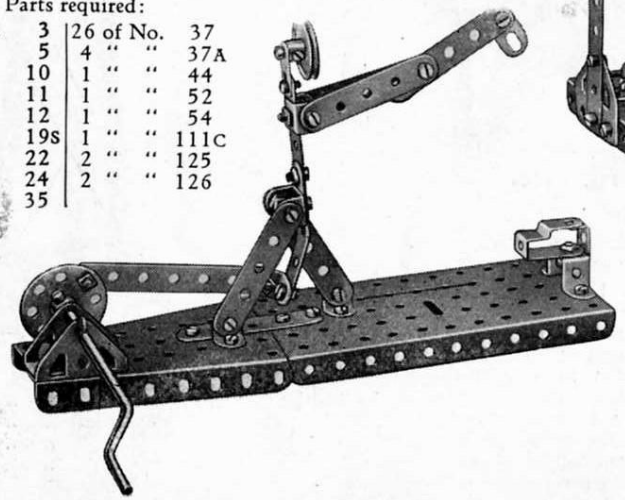
Parts required:

1 of No.	1	2 of No.	12	1 of No.	126A
2 " "	2	8 " "	37		

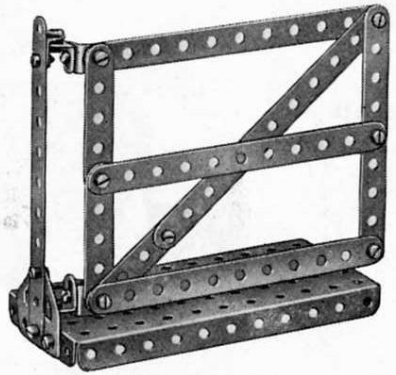
Model No. 1.131 Blacksmith

Parts required:

1 of No.	3	26 of No.	37
8 " "	5	4 " "	37A
2 " "	10	1 " "	44
2 " "	11	1 " "	52
8 " "	12	1 " "	54
1 " "	19S	1 " "	111C
1 " "	22	2 " "	125
1 " "	24	2 " "	126
1 " "	35		



Model No. 1.132 Model Gate



Parts required:

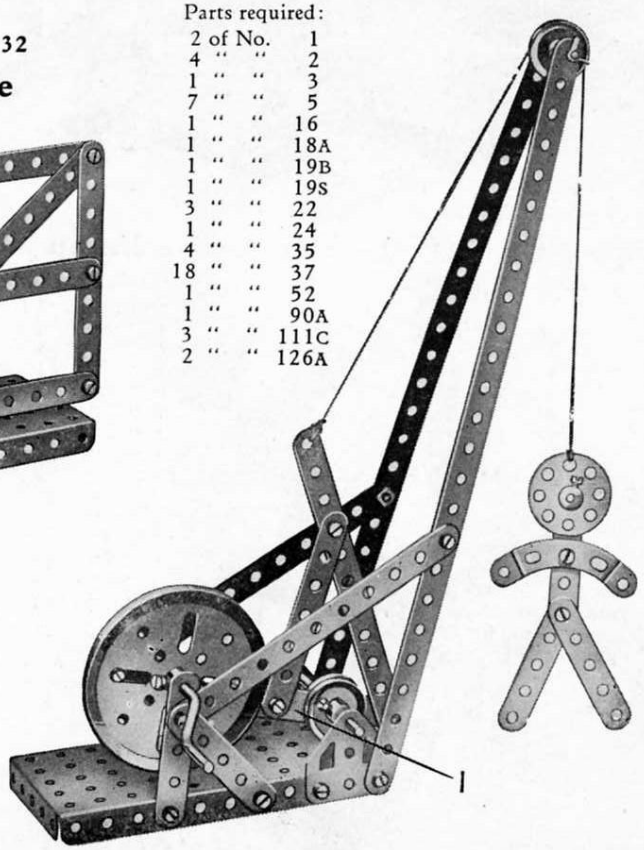
6 of No.	2		
3 " "	5		
5 " "	12		
13 " "	37		
4 " "	37A		
1 " "	52		
2 " "	111C		
1 " "	126A		

Model No. 1.133 Meccano Dancer

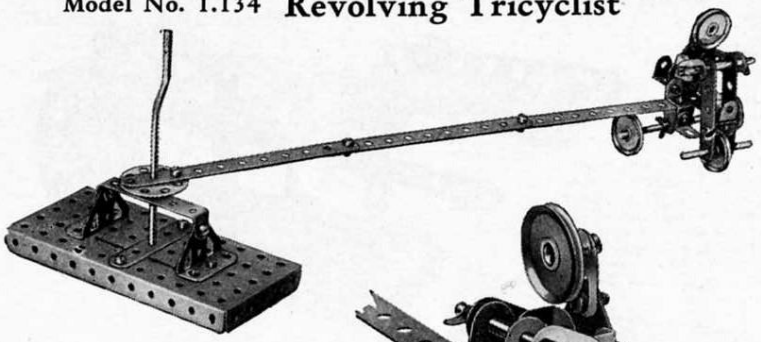
Two ⅜" Bolts, secured in opposite slots of the 3" Pulley Wheel, alternately press down the end of the 5½" Strip 1 and cause the figure to dance in a surprisingly lifelike manner.

Parts required:

2 of No.	1		
4 " "	2		
1 " "	3		
7 " "	5		
1 " "	16		
1 " "	18A		
1 " "	19B		
1 " "	19S		
3 " "	22		
1 " "	24		
4 " "	35		
18 " "	37		
1 " "	52		
1 " "	90A		
3 " "	111C		
2 " "	126A		



Model No. 1.134 Revolving Tricyclist



Parts required:

3	of No.	2	1	of No.	24
3	" "	5	5	" "	35
3	" "	10	25	" "	37
1	" "	11	1	" "	44
5	" "	12	2	" "	48A
1	" "	16	1	" "	52
2	" "	17	2	" "	125
1	" "	19S	2	" "	126
4	" "	22	1	" "	126A

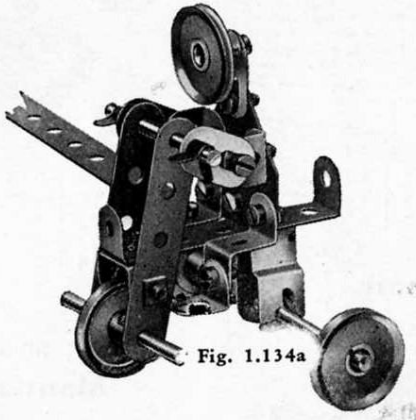
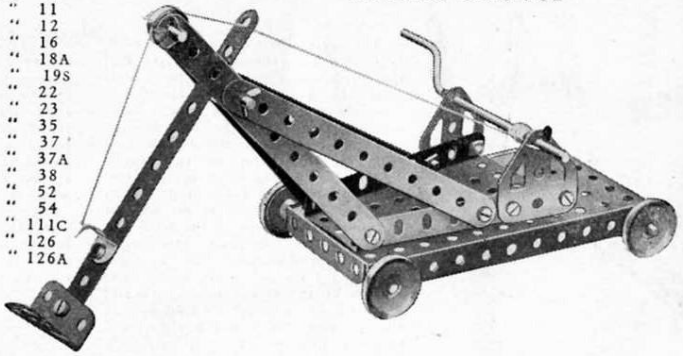


Fig. 1.134a

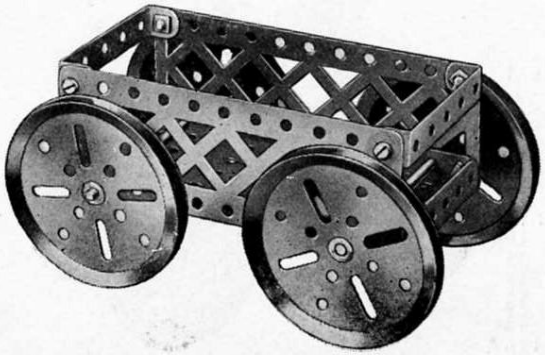
Model No. 1.135 Steam Shovel

Parts required:

5	of No.	2
1	" "	11
1	" "	12
2	" "	16
2	" "	18A
1	" "	19S
4	" "	22
1	" "	23
6	" "	35
12	" "	37
2	" "	37A
2	" "	38
1	" "	52
1	" "	54
1	" "	111C
1	" "	126
2	" "	126A



Model No. 1.136 Truck



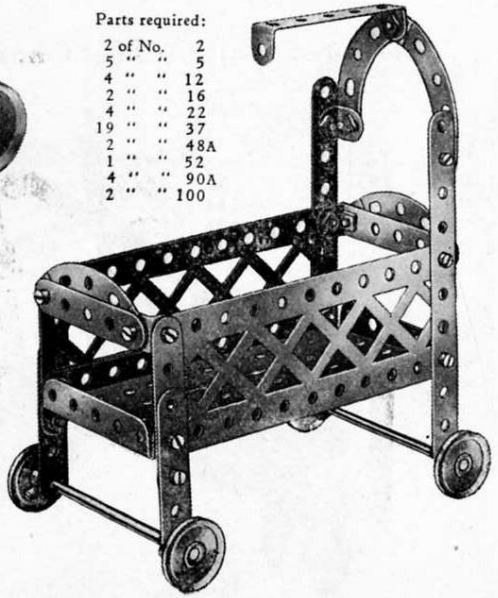
Parts required:

2	of No.	16
4	" "	19B
8	" "	37
2	" "	48A
1	" "	52
2	" "	100

Model No. 1.137 Cot

Parts required:

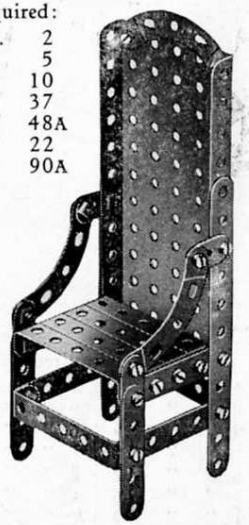
2	of No.	2
5	" "	5
4	" "	12
2	" "	16
4	" "	22
19	" "	37
2	" "	48A
1	" "	52
4	" "	90A
2	" "	100



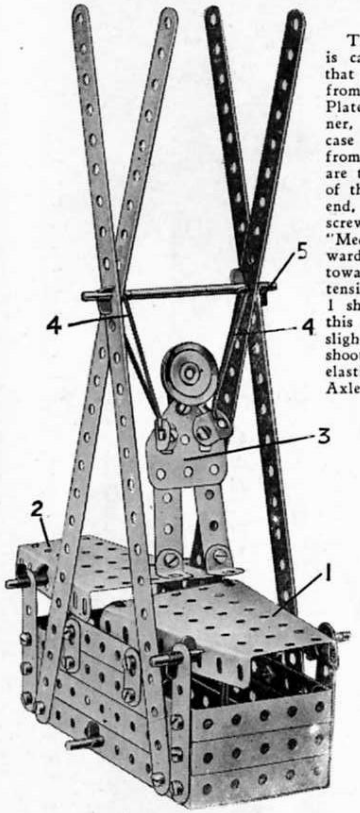
Model No. 1.138 Chair

Parts required:

2	of No.	2
8	" "	5
2	" "	10
22	" "	37
6	" "	48A
1	" "	22
3	" "	90A



Model No. 1.139 A Sudden Appearance

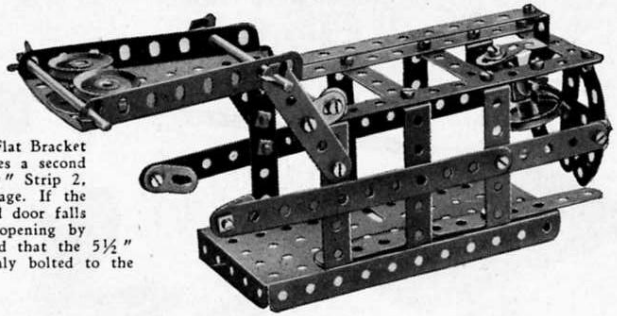


The Sector Plate 1, forming the lid, is carried pivotally on an Axle Rod that passes through its sides three holes from the end, and the rear Sector Plate 2 is pivoted in a similar manner, excepting that the Rod in this case passes through the fourth hole from the end. Pieces of thin elastic are tied to the end holes in each side of the front Sector Plate at its widest end, and are connected to the ends of screws at the bottom of the box. The "Meccanitian" 3 is placed face downward inside the box with his feet towards the far end of the model. The tension of the elastic holding the lid 1 should be sufficient to keep him in this position. On tilting the plates 1 slightly, however, he will suddenly shoot out of the box, drawn by the elastic bands 4 connected to the 3½" Axle Rod 5.

Parts required:

4 of No.	1	8 of No.	35
8 " "	2	29 " "	37
9 " "	5	6 " "	48A
1 " "	10	1 " "	52
6 " "	12	2 " "	54
3 " "	16	1 " "	111C
1 " "	22	1 " "	126A

Model No. 1.140 Rat Trap



The "bait" consists of a 1" fast Pulley and a ½" loose Pulley suspended by means of a Hook from a Double Bracket 1. The latter is bolted to a 1½"x½" Double Angle Strip that is free to turn on a 2" Rod journalled in a pair of Angle Brackets. A Flat Bracket bolted to the Double Bracket 1 engages a second Double Bracket on the end of the 5½" Strip 2, which is bolted to the door of the cage. If the "bait" is touched, the heavily-weighted door falls into place, and is prevented from re-opening by the Flat Brackets 3. It will be noticed that the 5½" Strips 4, which act as springs, are only bolted to the trap by their extreme ends.

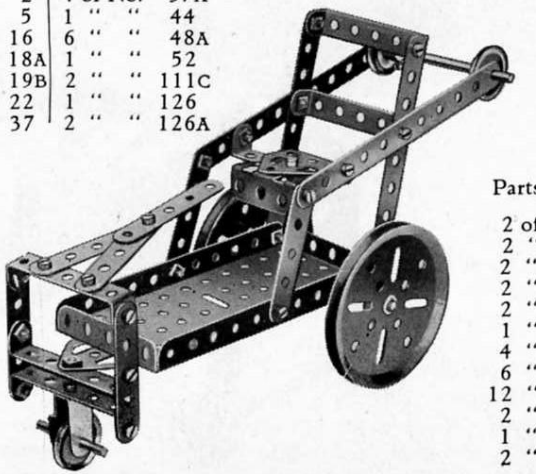
Parts required:

8 of No.	2	3 of No.	10	2 of No.	16	8 of No.	35	1 of No.	52
1 " "	3	2 " "	11	1 " "	17	31 " "	37	1 " "	54
8 " "	5	6 " "	12	3 " "	22	1 " "	38	1 " "	57
				1 " "	23	1 " "	48	2 " "	90
				1 " "	24	6 " "	48A	3 " "	111C

Model No. 1.141 Wheel Chair

Parts required:

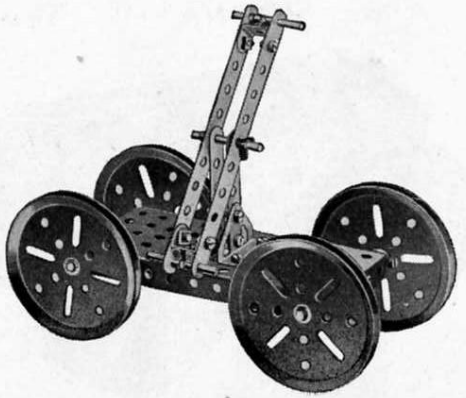
4 of No.	2	4 of No.	37A
7 " "	5	1 " "	44
1 " "	16	6 " "	48A
1 " "	18A	1 " "	52
2 " "	19B	2 " "	111C
3 " "	22	1 " "	126
24 " "	37	2 " "	126A



Model No. 1.142 Manual Fire Engine

Parts required:

2 of No.	2
2 " "	5
2 " "	11
2 " "	16
2 " "	17
1 " "	18A
4 " "	19B
6 " "	35
12 " "	37
2 " "	38
1 " "	52
2 " "	126



Model No. 1.143

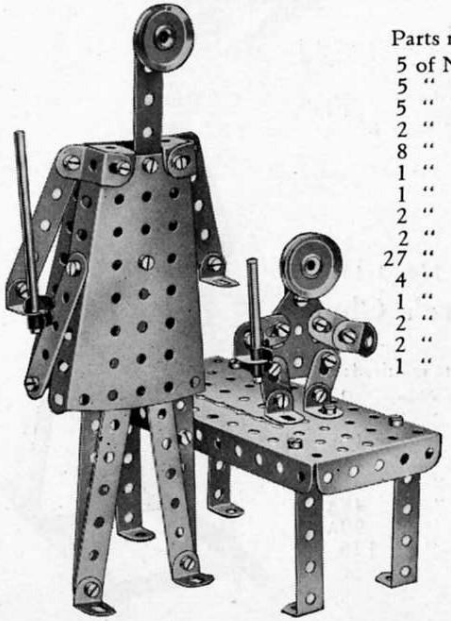
Field Roller

Parts required:

2 of No.	1	30 of No.	37
3 " "	5	6 " "	48A
6 " "	12	2 " "	90A
1 " "	16	2 " "	126
2 " "	19B		

Model No. 1.144

Dignity and Impudence



Parts required:

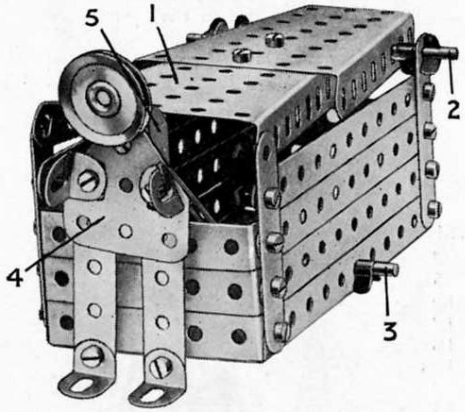
5 of No.	2
5 " "	5
5 " "	10
2 " "	11
8 " "	12
1 " "	16
1 " "	17
2 " "	22
2 " "	35
27 " "	37
4 " "	48A
1 " "	52
2 " "	111C
2 " "	125
1 " "	126A

Model No. 1.145

Disappearing Meccanitian

Parts required:

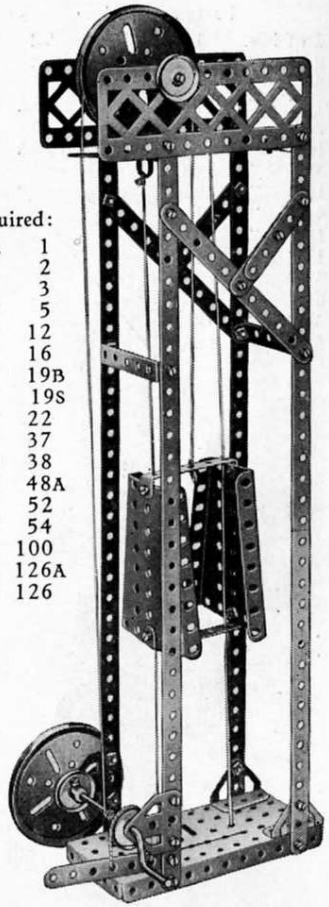
8 of No.	2	23 of No.	37
6 " "	5	1 " "	44
1 " "	10	6 " "	48A
4 " "	12	1 " "	52
2 " "	16	2 " "	54
1 " "	22	1 " "	111C
4 " "	35	1 " "	126A



The bottom of the box-like portion of the model consists of a 5½" x 2½" Flanged Plate; three 5½" Strips bolted to upright 2½" Strips form each side and each end consists of three 2½" x ½" Double Angle Strips. The lid 1, which is mounted pivotally on an Axle Rod 2, consists of two Sector Plates bolted together. Elastic bands are tied to the sides of these Plates and connected to Rod 3 passed through the bottom of the box. The Meccanitian 4 also is connected to this Rod by pieces of elastic. On pressing the end of the rear Sector Plate the lid opens sufficiently to allow the figure to be drawn inside and then snaps back into place. A Cranked Bent Strip 5 is bolted at the back of the figure and rests against the edge of the Sector Plate.

Model No. 1.146

Elevator



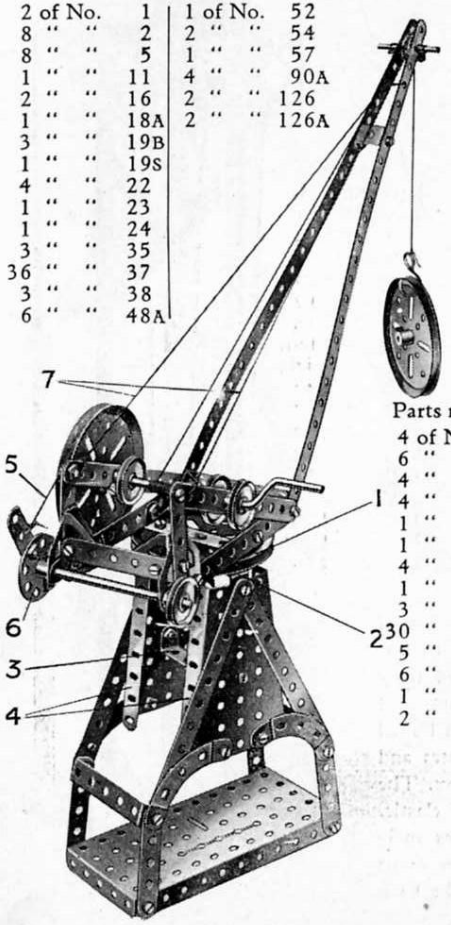
Parts required:

4 of No.	1
7 " "	2
1 " "	3
4 " "	5
1 " "	12
1 " "	16
2 " "	19B
1 " "	19S
4 " "	22
33 " "	37
3 " "	38
6 " "	48A
1 " "	52
2 " "	54
2 " "	100
2 " "	126A
2 " "	126

Model No. 1.147
Elevated Crane

Parts required:

2	of No.	1	1	of No.	52
8	" "	2	2	" "	54
8	" "	5	1	" "	57
1	" "	11	4	" "	90A
2	" "	16	2	" "	126
1	" "	18A	2	" "	126A
3	" "	19B			
1	" "	19S			
4	" "	22			
1	" "	23			
1	" "	24			
3	" "	35			
36	" "	37			
3	" "	38			
6	" "	48A			

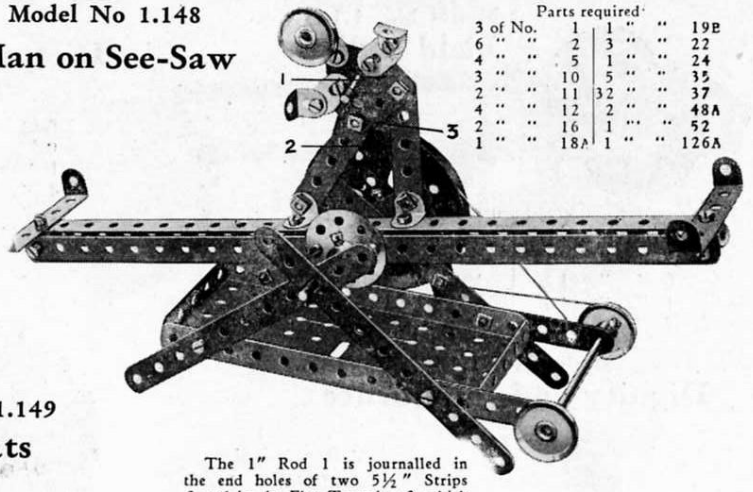


The base of the swiveling portion of the crane consists of a 3" Pulley Wheel 1, which has a 3½" Axle Rod nipped in its boss. This Rod is journalled in two 2½" Double Angle Strips 2 and 3 secured between the Sector Plates 4. The brake cord 5 passes round the 3" Pulley as shown, and is tied to one of the holes in the Bush Wheel 6. The cords 7 serve merely to support the weight of the jib.

Model No. 1.148
Man on See-Saw

Parts required:

3	of No.	1	1	" "	19B
6	" "	2	3	" "	22
4	" "	5	1	" "	24
3	" "	10	5	" "	35
2	" "	11	32	" "	37
4	" "	12	2	" "	48A
2	" "	16	1	" "	52
1	" "	18A	1	" "	126A

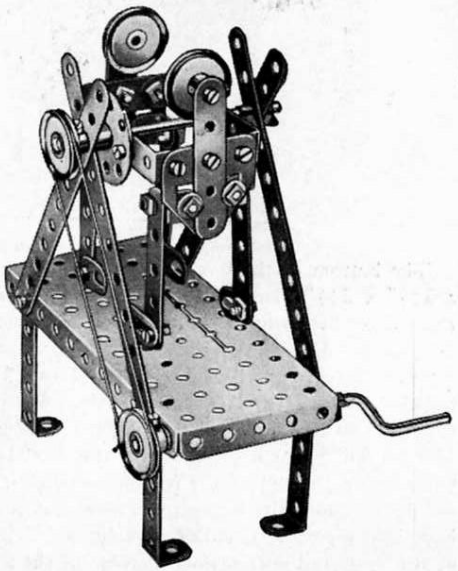


The 1" Rod 1 is journalled in the end holes of two 5½" Strips 2 and in the Flat Trunnion 3 which joins them. It is held in position by two Spring Clips, placed on either side of the 5½" Strips 2.

Model No. 1.149
Acrobats

Parts required:

4	of No.	2
6	" "	5
4	" "	10
4	" "	12
1	" "	16
1	" "	19S
4	" "	22
1	" "	24
3	" "	35
30	" "	37
5	" "	38
6	" "	48A
1	" "	52
2	" "	126A

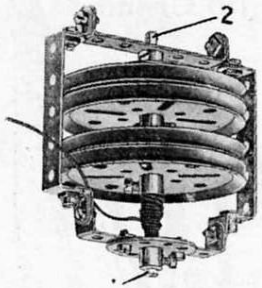


Model No. 1.150
Umpire's Chair

Parts required:

6	of No.	2
7	" "	5
2	" "	10
4	" "	12
24	" "	37
3	" "	48A
2	" "	90A
2	" "	126

Model No. 1.151 Gyroscope

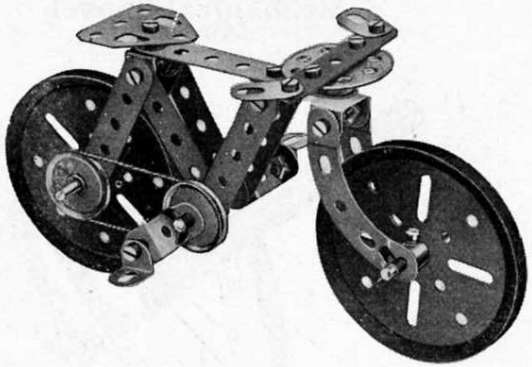


Parts required:

4	of No.	12
1	" "	16
4	" "	19B
1	" "	24
10	" "	37
4	" "	48A

The $\frac{7}{32}$" Bolt 1 is gripped by the set-screw of the Bush Wheel. The lower end of the Rod 2 of the Gyroscope enters the boss of the Bush Wheel and rests on the shank of the bolt 1.

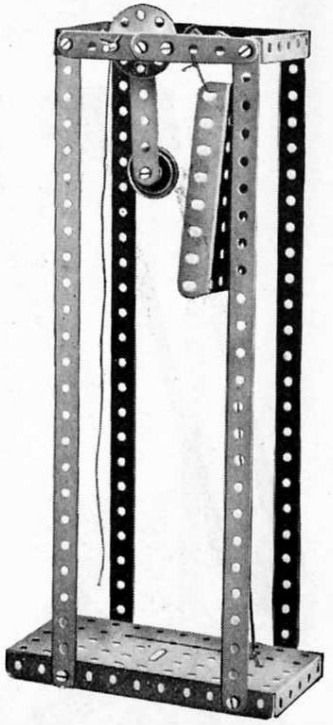
Model No. 1.152 Bicycle



Parts required:

1	of No.	3
7	" "	5
2	" "	10
2	" "	11
4	" "	12
2	" "	17
1	" "	18A
2	" "	19B
2	" "	22
1	" "	24
4	" "	35
13	" "	37
4	" "	37A
3	" "	38
2	" "	90A
4	" "	111C
2	" "	125
1	" "	126A

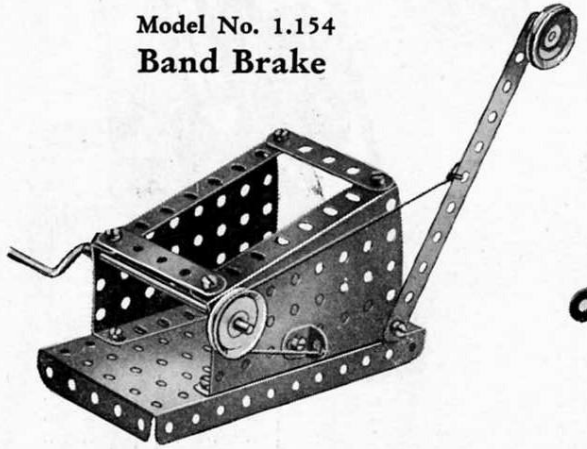
Model No. 1.153 Fire Alarm



Parts required:

4	of No.	1	2	of No.	35
1	" "	3	13	" "	37
4	" "	5	2	" "	48A
1	" "	16	1	" "	52
1	" "	22	1	" "	54
1	" "	24			

Model No. 1.154 Band Brake



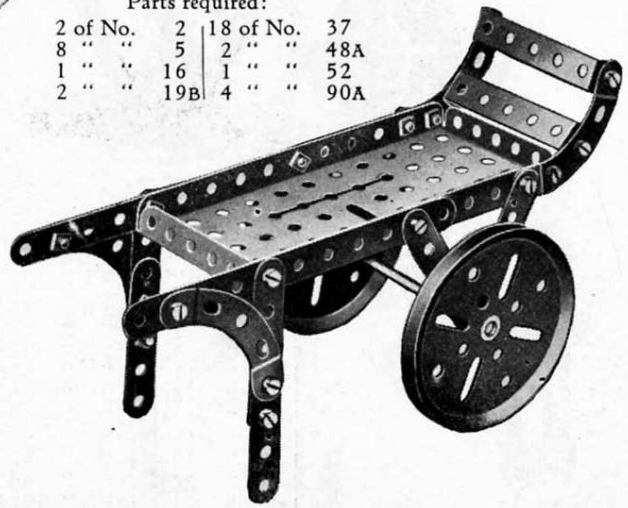
Parts required:

1	of No.	2	1	of No.	19A	10	of No.	37
2	" "	5	2	" "	22	1	" "	52
1	" "	12	1	" "	35	2	" "	54

Model No. 1.155 Luggage Truck

Parts required:

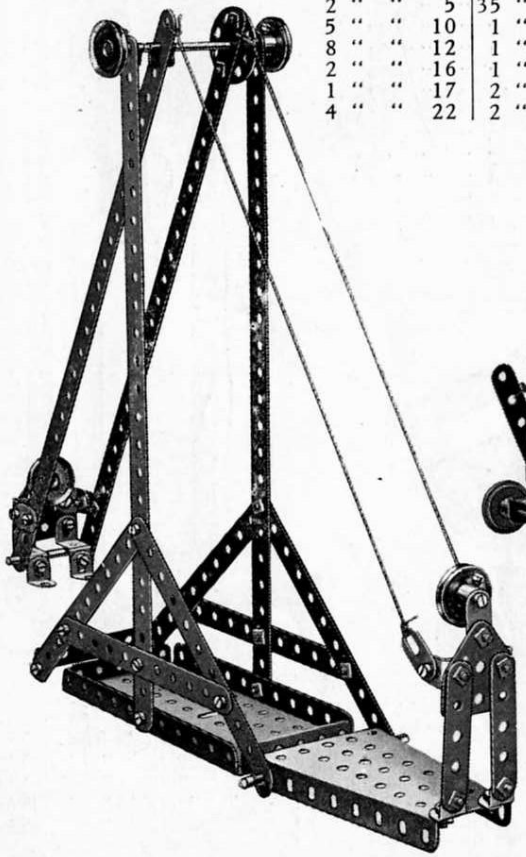
2	of No.	2	18	of No.	37
8	" "	5	2	" "	48A
1	" "	16	1	" "	52
2	" "	19B	4	" "	90A



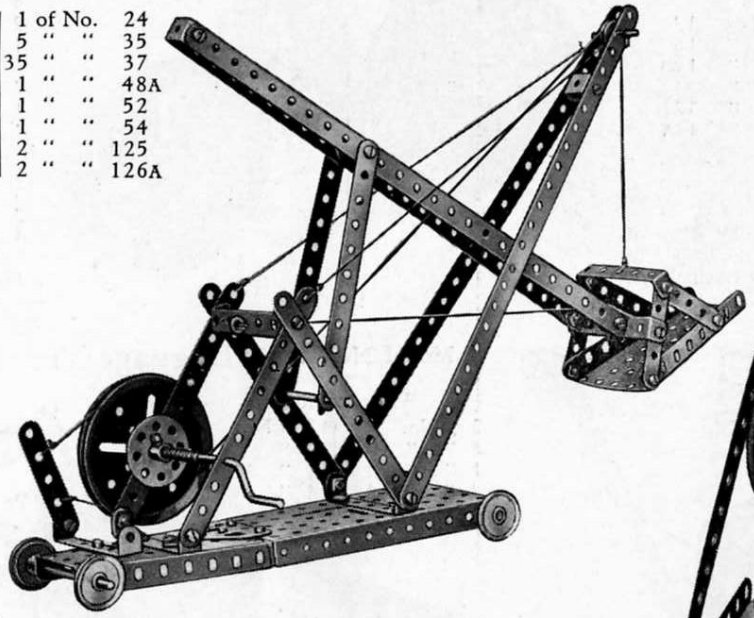
Model No. 1.156 Boy on Swing

Parts required:

4 of No.	1	1 of No.	24
6 " "	2	5 " "	35
2 " "	5	35 " "	37
5 " "	10	1 " "	48A
8 " "	12	1 " "	52
2 " "	16	1 " "	54
1 " "	17	2 " "	125
4 " "	22	2 " "	126A



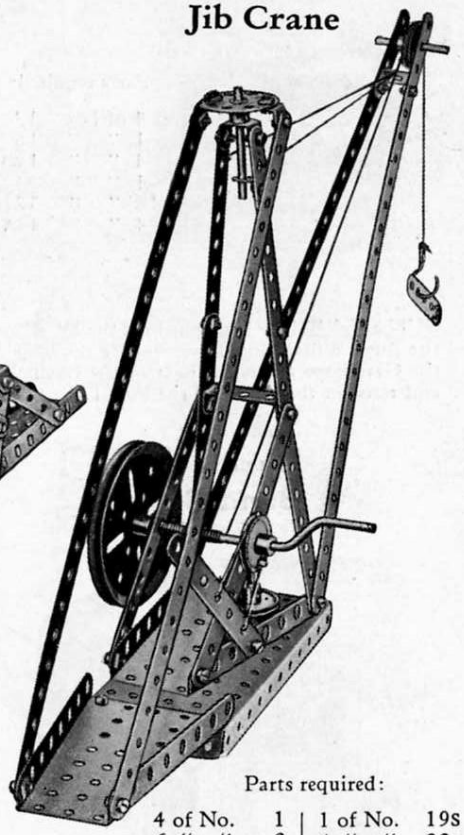
Model No. 1.157 Mechanical Shovel



Parts required:

4 of No.	1	1 of No.	24
6 " "	2	6 " "	35
5 " "	5	35 " "	37
2 " "	11	1 " "	37A
3 " "	16	1 " "	38
1 " "	18A	1 " "	48
1 " "	19B	6 " "	48A
1 " "	19S	1 " "	52
4 " "	22	2 " "	54
1 " "	23	1 " "	126A

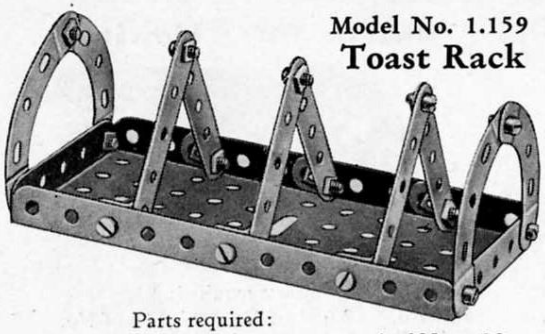
Model No. 1.158 Jib Crane



Parts required:

4 of No.	1	1 of No.	19S
6 " "	2	4 " "	22
1 " "	3	1 " "	24
1 " "	5	23 " "	37
2 " "	10	1 " "	48
2 " "	11	1 " "	52
1 " "	16	2 " "	54
2 " "	17	1 " "	57
1 " "	19B		

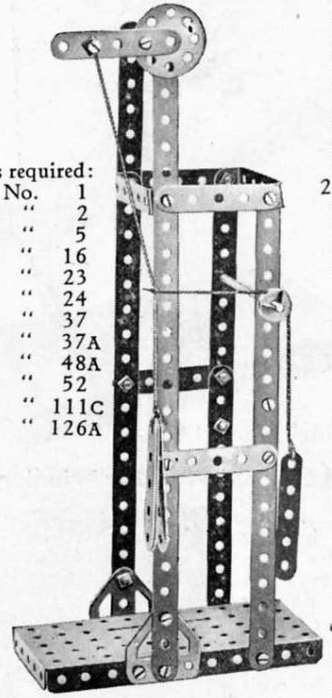
Model No. 1.159 Toast Rack



Parts required:

6 of No.	5	21 of No.	37	4 of No.	90A
6 " "	12	1 " "	52		

Model No. 1.160 Crosshead Demonstration Model



Parts required:

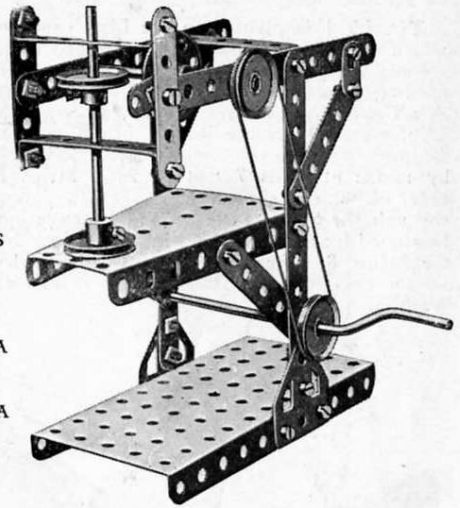
2 of No.	1
4 " "	2
9 " "	5
2 " "	16
1 " "	23
1 " "	24
20 " "	37
1 " "	37A
2 " "	48A
1 " "	52
1 " "	111C
2 " "	126A

This is an apparatus for determining the forces that act at the crosshead of a reciprocating engine. The upper inclined length of cord represents the connecting Rod and the lower or vertical portion, the piston rod. The pull on the third cord indicates the pressure exerted on the slide bars on the engine due to the angularity of the connecting rod.

Model No. 1.161 Drop Stamp

Parts required:

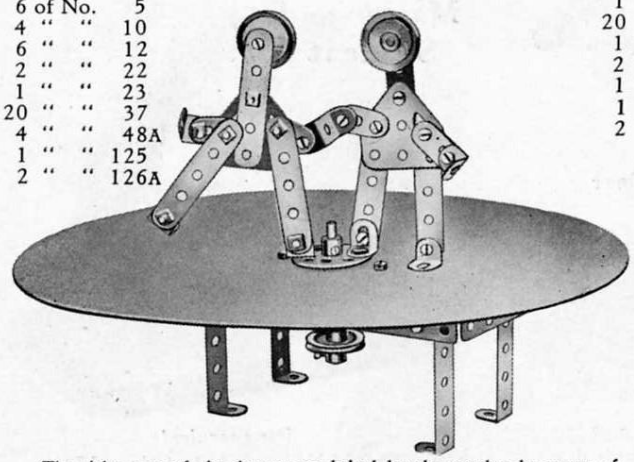
4 of No.	2
6 " "	5
3 " "	10
2 " "	16
1 " "	19S
4 " "	22
1 " "	24
2 " "	35
27 " "	37
3 " "	48A
1 " "	52
1 " "	54
2 " "	126A



Model No. 1.162 Eccentric Dancers

Parts required

6 of No.	5
4 " "	10
6 " "	12
2 " "	22
1 " "	23
20 " "	37
4 " "	48A
1 " "	125
2 " "	126A

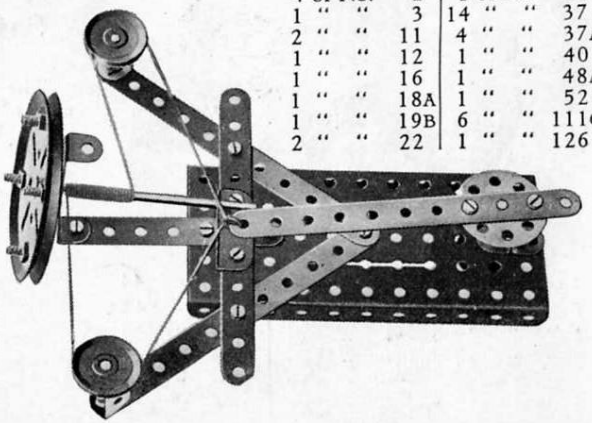


The right arms of the dancers are bolted loosely together by means of a Reversed Angle Bracket. Their outer "legs" should be lock-nutted to the Flat Trunnions. The model is operated by rotating a 1" Pulley beneath the dance-floor (a circular piece of cardboard mounted on a 5½" Flanged Plate). This Pulley is secured to a short Rod carrying the Bush Wheel on which the dancers are mounted. If desired the Pulley may be connected by cord to a Crank Handle suitably mounted at a distance.

Model No. 1.163 Boat Steering Gear

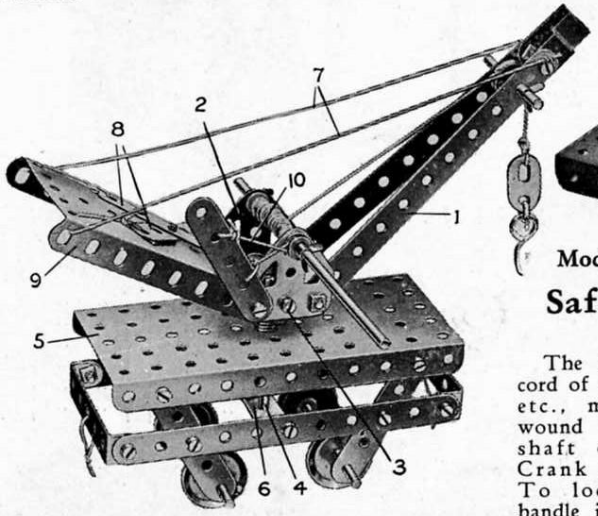
Parts required:

4 of No.	2	1 of No.	24
1 " "	3	14 " "	37
2 " "	11	4 " "	37A
1 " "	12	1 " "	40
1 " "	16	1 " "	48A
1 " "	18A	1 " "	52
1 " "	19B	6 " "	111C
2 " "	22	1 " "	126



Model No. 1.164 Travelling Crane

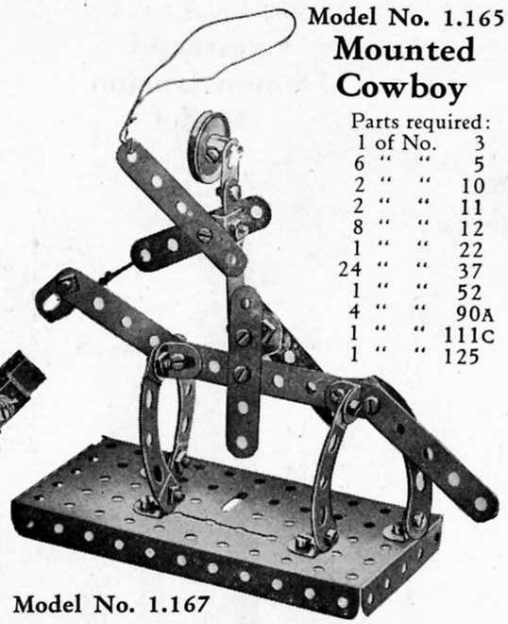
The jib 1 is pivoted to the Flat Trunnions 2, which are bolted at 3 to Angle Brackets secured to a Bush Wheel. The latter is nipped to a 2" Rod 4 passing through the Plate 5 and further supported in a Double Angle Strip 6. A Washer and Spring Clip mounted on the Rod 4 below the Strip 6 secure the crane to the carriage. The jib is supported by means of cords 7 tied to 2½" Strips 8, the holes of which engage the shank of a bolt passed through the Sector Plate 9, and its elevation may be altered by inserting this bolt in different holes in the Strips 8. The cord 10 of the brake lever is wound once round the Crank Handle, between two Washers.



Parts required:

4 of No.	2	1 of No.	19S	1 of No.	44		
7 " "	5	4 " "	22	3 " "	48A		
1 " "	10	1 " "	23	1 " "	52		
2 " "	12	1 " "	24	1 " "	54		
2 " "	16	5 " "	35	1 " "	57		
2 " "	17	27 " "	37	2 " "	126A		
		6 " "	38				

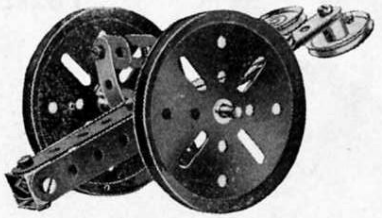
Model No. 1.165 Mounted Cowboy



Parts required:

1 of No.	3
6 " "	5
2 " "	10
2 " "	11
8 " "	12
1 " "	22
24 " "	37
1 " "	52
4 " "	90A
1 " "	111C
1 " "	125

Model No. 1.166 Howitzer

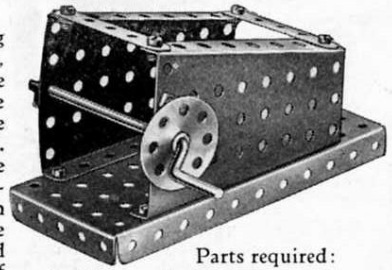


Parts required:

2 of No.	2	1 of No.	16	14 of No.	37
6 " "	5	2 " "	19B	2 " "	38
4 " "	10	2 " "	22	2 " "	111C
2 " "	11	2 " "	35	2 " "	125

Model No. 1.167 Safety Catch For Winding Gear

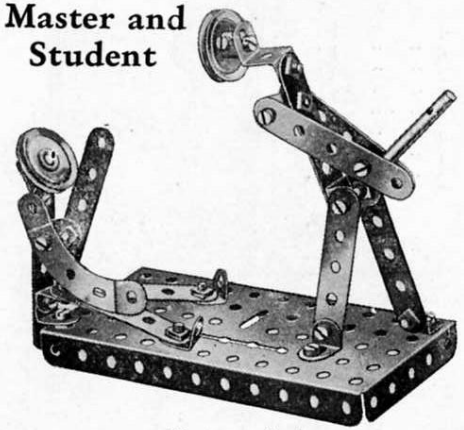
The hoisting cord of a crane, etc., may be wound on the shaft of the Crank Handle. To lock the handle in position, the Bush Wheel should be pushed inward so that one of its holes engages the shank of the ⅜" Bolt 1.



Parts required:

2 of No.	5	8 of No.	37
1 " "	19S	1 " "	52
1 " "	24	2 " "	54
1 " "	35	1 " "	111C

Model No. 1.168 Master and Student

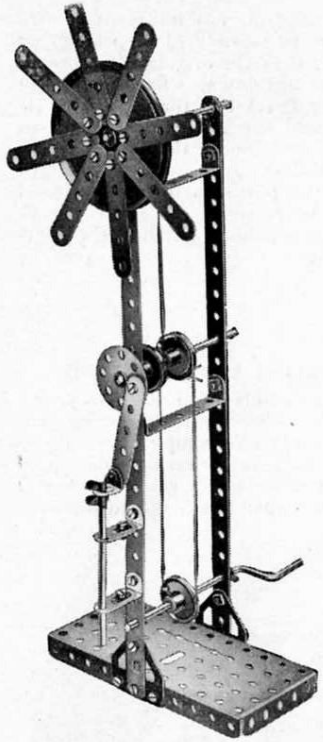


Parts required:

9 of No.	5	3 of No.	37A
1 " "	10	1 " "	52
2 " "	11	1 " "	90A
8 " "	12	4 " "	111C
2 " "	22	1 " "	125
20 " "	37		

Model No. 1.169

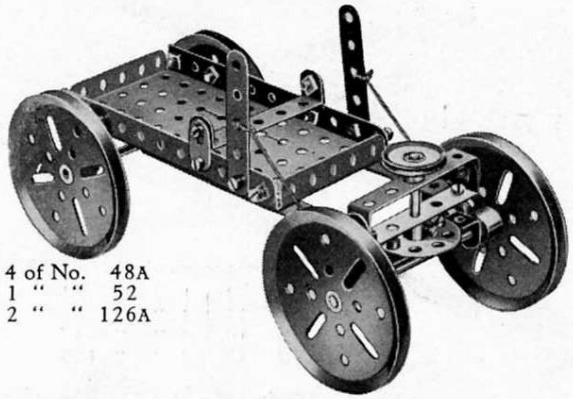
Windmill Pump



Parts required:

2	of No.	1	1	of No.	24
9	" "	5	4	" "	35
2	" "	10	24	" "	37
3	" "	12	4	" "	37A
3	" "	16	2	" "	48A
1	" "	19B	1	" "	52
1	" "	19S	2	" "	111C
4	" "	22	2	" "	126A

Model No. 1.170 **Coaster**

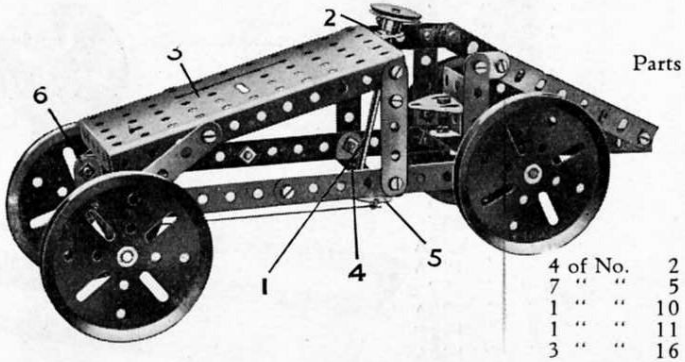


Parts required:

2	of No.	2	4	of No.	48A
2	" "	5	1	" "	52
4	" "	10	2	" "	126A
2	" "	16			
1	" "	18A			
4	" "	19B			
1	" "	22			
1	" "	24			
22	" "	37			
2	" "	37A			
6	" "	38			

Model No. 1.171 **Racing Motor Car**

The steering column 1 is journalled in an Angle Bracket 2 bolted to the 5½"x2½" Flanged Plate 3, and in the second hole of the 2½"x½" Double Angle Strip 4. A Bush Wheel 5, secured to the lower end of the steering column, is connected by two short lengths of cord to a second 2½"x½" Double Angle Strip carrying the front axle. This strip is pivoted to a similar Double Angle Strip 6 by means of a bolt and nuts (Standard Mechanism No. 262).

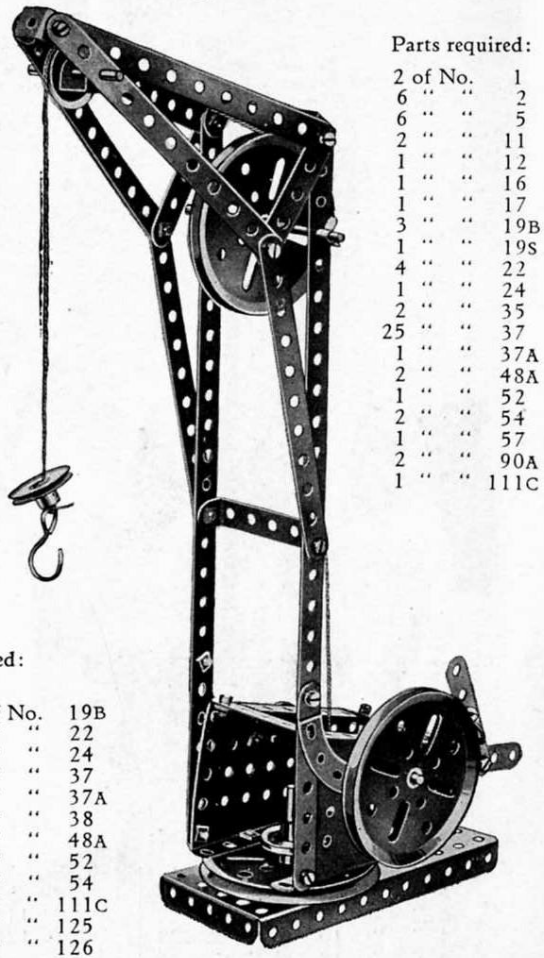


Parts required:

4	of No.	19B	4	of No.	2
1	" "	22	7	" "	5
1	" "	24	1	" "	10
25	" "	37	1	" "	11
2	" "	37A	3	" "	16
4	" "	38			
4	" "	48A			
1	" "	52			
2	" "	54			
1	" "	111C			
1	" "	125			
1	" "	126			

Model No. 1.172

Swivelling Crane

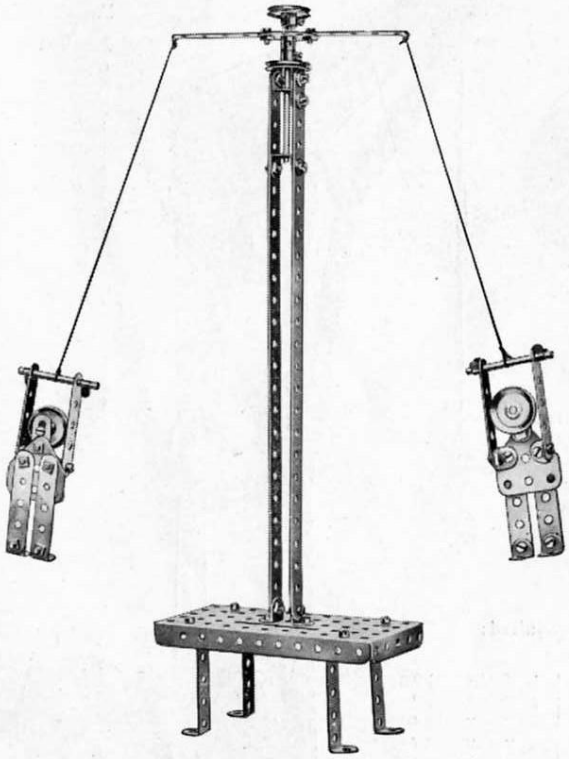


Parts required:

2	of No.	1	1	of No.	57
6	" "	2	2	" "	90A
6	" "	5	1	" "	111C
2	" "	11			
1	" "	12			
1	" "	16			
1	" "	17			
3	" "	19B			
1	" "	19S			
4	" "	22			
1	" "	24			
2	" "	35			
25	" "	37			
1	" "	37A			
2	" "	48A			
1	" "	52			
2	" "	54			

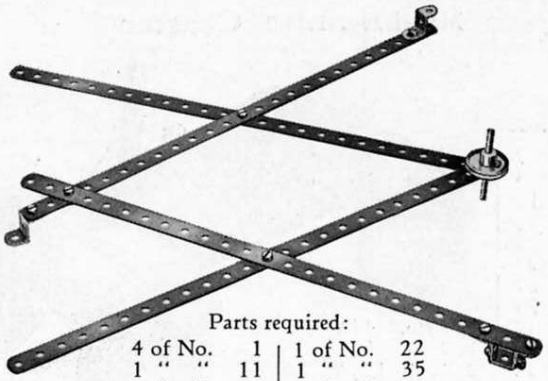
Model No. 1.173

Revolving Gymnasts



Parts required:

4 of No.	1	3 of No.	16	28 of No.	37
6 " "	2	1 " "	19S	1 " "	52
6 " "	5	4 " "	22	2 " "	111C
4 " "	10	1 " "	24	2 " "	126A
8 " "	12	7 " "	35		



Parts required:

4 of No.	1	1 of No.	22
1 " "	11	1 " "	35
2 " "	12	4 " "	37
1 " "	17	2 " "	125

Model No. 1.174

Pantograph

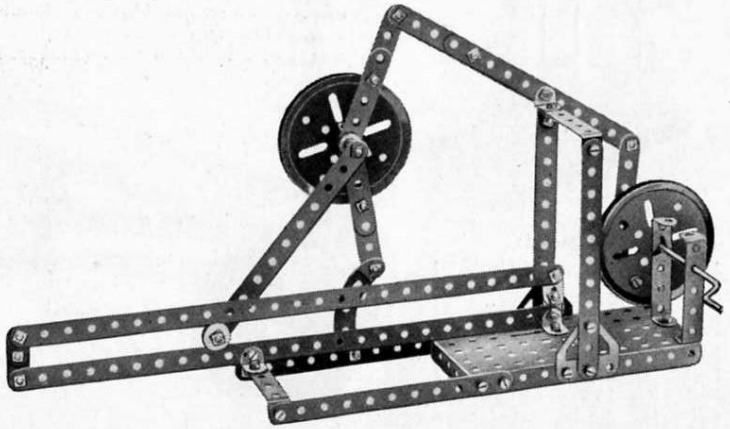
The pantograph enables plans, drawings, etc., to be reproduced on a larger or smaller scale than the original. If a pencil, suitably whittled down, is fixed in the Reversed Angle Bracket at the top of the illustration, and the 1½" Rod is made to follow the outlines of the drawing, the pencil will draw an accurately enlarged sketch. If the positions of the Rod and the pencil be reversed, the latter can be made to trace a reduced sketch of the original drawing.

Model No. 1.175 Double Action Piston Connection

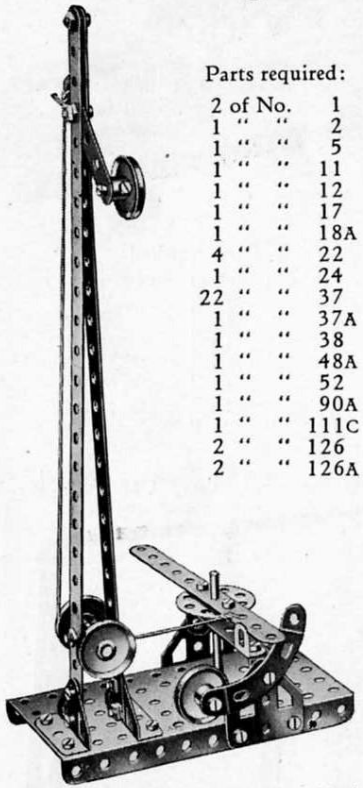
The model should be carefully built up as shown, with lock-nuts at all working joints. It will be seen that the piston (which is represented by the ½" loose Pulley Wheel between the slide bars) moves backward and forward only once for every two complete revolutions of the wheel on the right, whereas the ordinary piston does so once for each revolution of the crankshaft. The 3" Pulley Wheel on the shaft of the Crank Handle carries a Double Bracket to which the 3½" Strip is pivoted by a bolt and two nuts (see Standard Mechanism No. 262).

Parts required:

2 of No.	1
6 " "	2
1 " "	3
5 " "	5
4 " "	10
2 " "	11
3 " "	12
2 " "	19B
1 " "	19S
1 " "	23
1 " "	35
36 " "	37
5 " "	37A
4 " "	48A
1 " "	52
1 " "	90A
3 " "	111C
2 " "	126A



Model No. 1.176
Automatic Signal

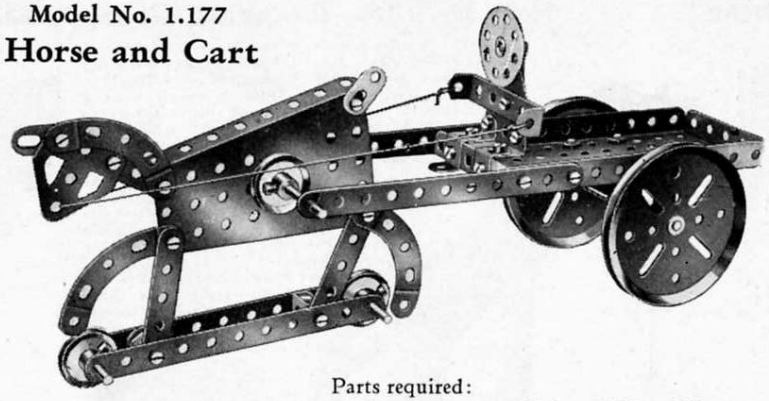


Parts required:

2	of No.	1
1	" "	2
1	" "	5
1	" "	11
1	" "	12
1	" "	17
1	" "	18A
4	" "	22
1	" "	24
22	" "	37
1	" "	37A
1	" "	38
1	" "	48A
1	" "	52
1	" "	90A
1	" "	111C
2	" "	126
2	" "	126A

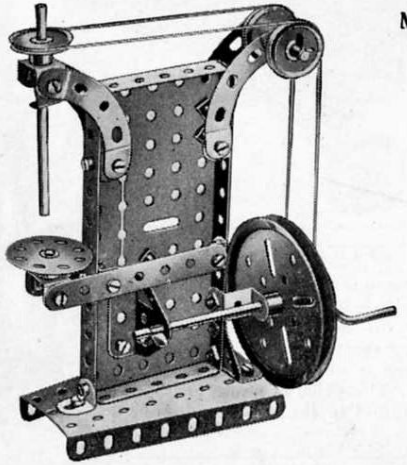
The weighted Curved Strip normally holds the end of the 5½" Strip against an Angle Bracket, allowing the signal arm to fall to the "all clear" position. Any train passing the signal, however, strikes the opposite end of the 5½" Strip, and by means of the cord shown, raises the arm to indicate "danger." The Curved Strip moves to allow the end of the 5½" Strip to pass over it, and is returned to its original position by reason of its weighted end. The signal then remains at "danger" until the mechanism is re-set.

Model No. 1.177
Horse and Cart



Parts required:

4	of No.	2	2	of No.	16	2	of No.	35	3	of No.	90A
3	" "	5	2	" "	18A	26	" "	37	1	" "	111C
3	" "	10	2	" "	19B	1	" "	48	2	" "	125
2	" "	11	4	" "	22	1	" "	52	2	" "	126
2	" "	12	1	" "	24	1	" "	54	2	" "	126A



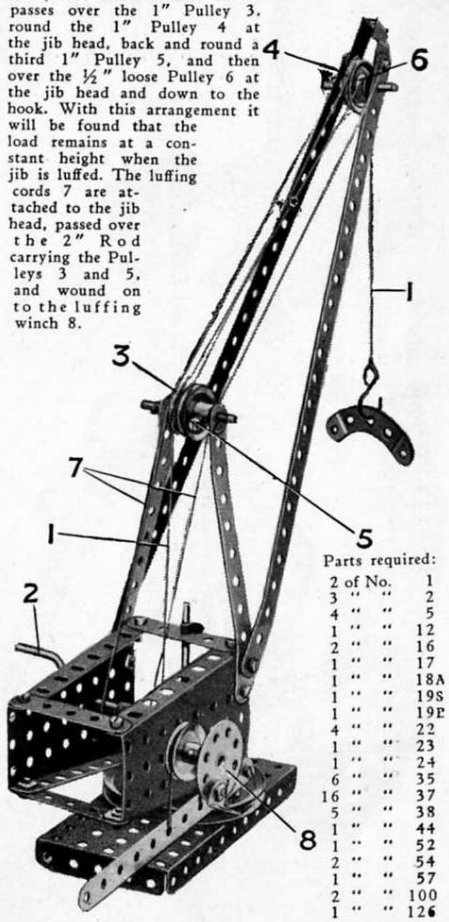
Model No. 1.178
Drill

Parts required:

1	of No.	3
2	" "	11
6	" "	12
1	" "	16
1	" "	18A
1	" "	19B
1	" "	19S
3	" "	22
1	" "	24
2	" "	35
27	" "	37
1	" "	52
1	" "	54
4	" "	90A
1	" "	125
2	" "	126

Model No. 1.179
Patent Luffing Crane

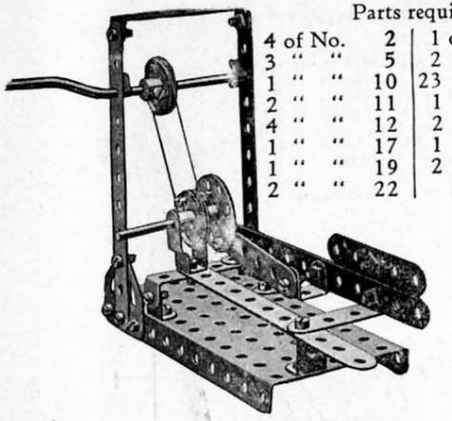
The hoisting cord 1 is operated by the Crank Handle 2. It passes over the 1" Pulley 3, round the 1" Pulley 4 at the jib head, back and round a third 1" Pulley 5, and then over the ½" loose Pulley 6 at the jib head and down to the hook. With this arrangement it will be found that the load remains at a constant height when the jib is luffed. The luffing cords 7 are attached to the jib head, passed over the 2" Rod carrying the Pulleys 3 and 5, and wound on to the luffing winch 8.



Parts required:

2	of No.	1
3	" "	2
4	" "	5
1	" "	12
2	" "	16
1	" "	17
1	" "	18A
1	" "	19S
1	" "	19P
4	" "	22
1	" "	23
1	" "	24
6	" "	35
16	" "	37
5	" "	38
1	" "	44
1	" "	52
2	" "	54
1	" "	57
2	" "	100
1	" "	126

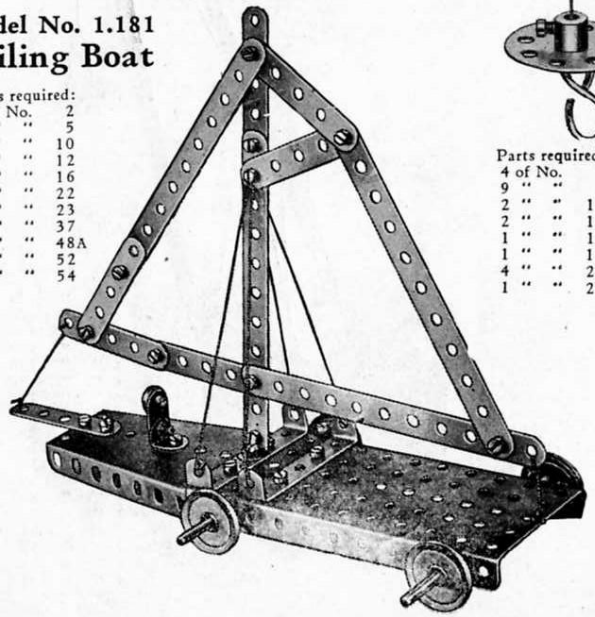
Model No. 1.180 Sawing Machine



Parts required:

4	of No.	2	1	of No.	24
3	" "	5	2	" "	35
1	" "	10	23	" "	37
2	" "	11	1	" "	44
4	" "	12	2	" "	48A
1	" "	17	1	" "	52
1	" "	19	2	" "	126A
2	" "	22			

Model No. 1.181 Sailing Boat

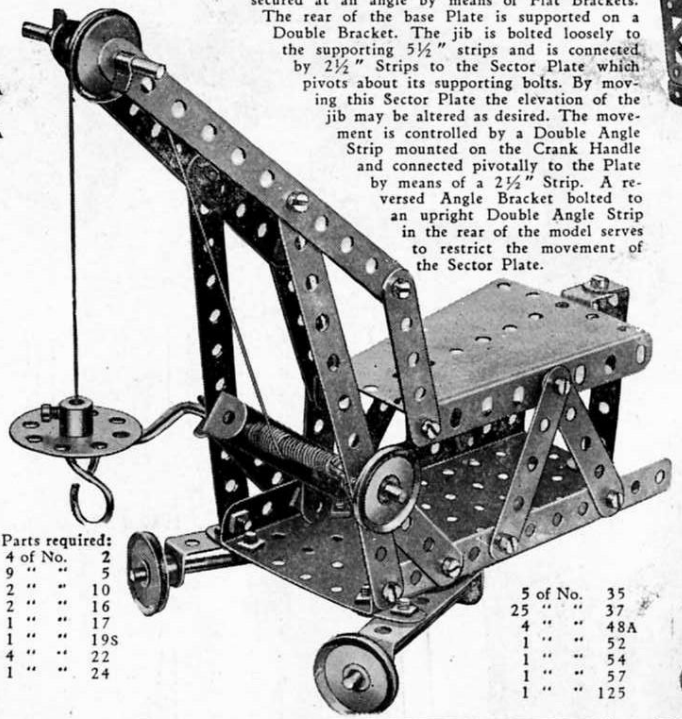


Parts required:

4	of No.	2
6	" "	5
1	" "	10
6	" "	12
2	" "	16
4	" "	22
1	" "	23
20	" "	37
2	" "	48A
1	" "	52
1	" "	54

Model No. 1.182 Rotating Crane

The running wheels of this crane are journalled in Double Angle Strips bolted to the base Plate and secured at an angle by means of Flat Brackets. The rear of the base Plate is supported on a Double Bracket. The jib is bolted loosely to the supporting 5½" strips and is connected by 2½" Strips to the Sector Plate which pivots about its supporting bolts. By moving this Sector Plate the elevation of the jib may be altered as desired. The movement is controlled by a Double Angle Strip mounted on the Crank Handle and connected pivotally to the Plate by means of a 2½" Strip. A reversed Angle Bracket bolted to an upright Double Angle Strip in the rear of the model serves to restrict the movement of the Sector Plate.



Parts required:

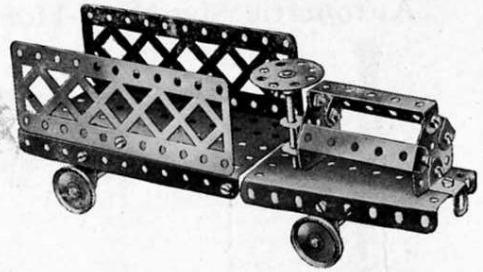
4	of No.	2
9	" "	5
2	" "	10
2	" "	16
1	" "	17
1	" "	19S
4	" "	22
1	" "	24

5	of No.	35
25	" "	37
4	" "	48A
1	" "	52
1	" "	54
1	" "	57
1	" "	125

HOW TO CONTINUE

This completes our examples of models that can be built with Outfit No. 1. In order to build the models illustrated on the next three pages a Meccano Electric Motor is required in addition to the parts in Outfit No. 1. The price of the Meccano Motor will be found in the list at the end of the Manual.

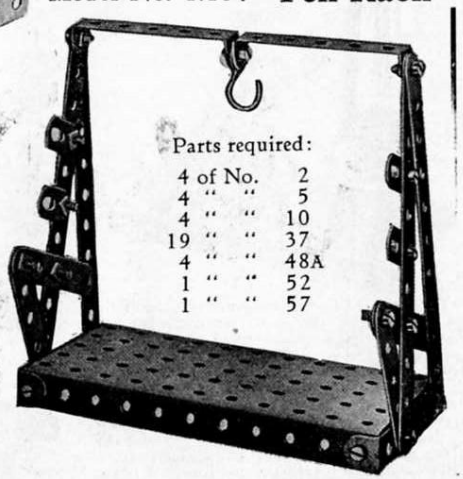
Model No. 1.183 Motor Truck



Parts required:

2	of No.	5	1	of No.	35
4	" "	10	3	" "	37
1	" "	11	4	" "	48A
2	" "	12	1	" "	52
2	" "	16	1	" "	54
1	" "	17	2	" "	100
4	" "	22	1	" "	125
1	" "	24	2	" "	126A

Model No. 1.184 Pen Rack



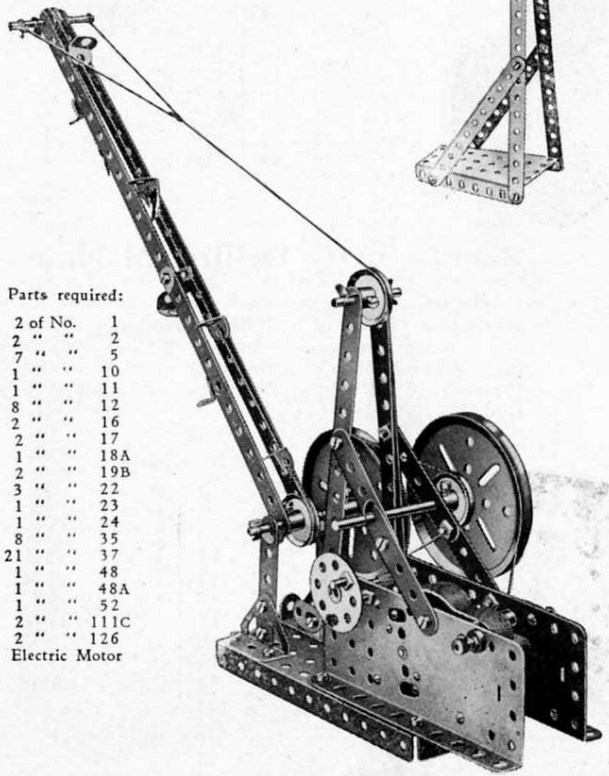
Parts required:

4	of No.	2
4	" "	5
4	" "	10
19	" "	37
4	" "	48A
1	" "	52
1	" "	57

Model No. 1.185x

Hay Elevator

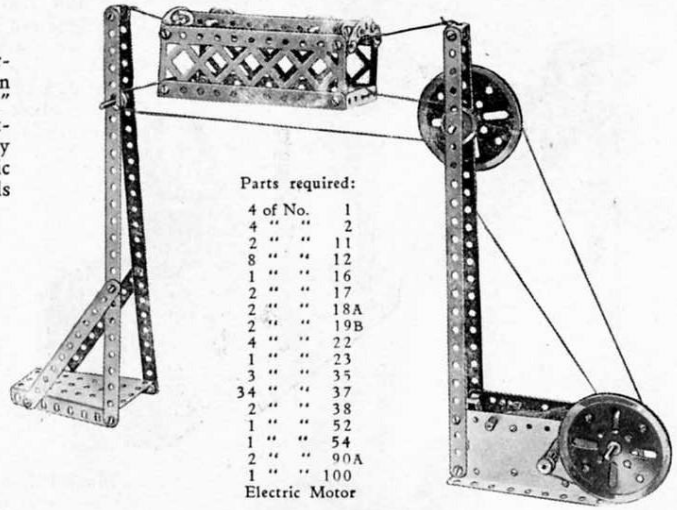
The arm is raised and lowered by operating the hand wheel on the left. When not in use, this wheel is held by a 3/8" bolt engaging one of its holes. The elevating mechanism is operated from a pulley on the armature spindle of the Electric Motor via belts and the Pulley Wheels shown.



Parts required:

2 of No.	1
2 " "	2
7 " "	5
1 " "	10
1 " "	11
8 " "	12
2 " "	16
2 " "	17
1 " "	18A
2 " "	19B
3 " "	22
1 " "	23
1 " "	24
8 " "	35
21 " "	37
1 " "	48
1 " "	48A
1 " "	52
2 " "	111C
2 " "	126
Electric Motor	

Model No. 1.186x **Overhead Ropeway**

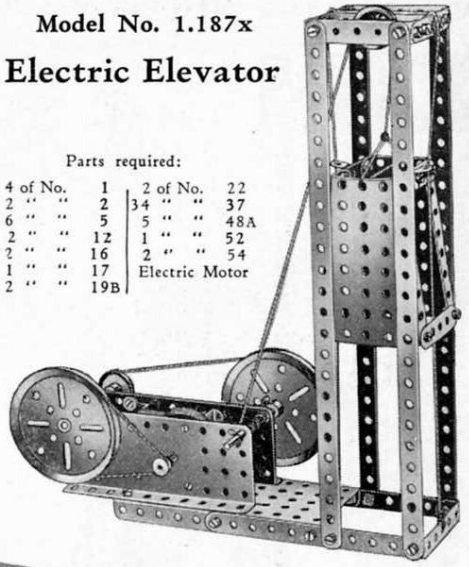


Parts required:

4 of No.	1
4 " "	2
2 " "	11
8 " "	12
1 " "	16
2 " "	17
2 " "	18A
2 " "	19B
4 " "	22
1 " "	23
3 " "	35
34 " "	37
2 " "	38
1 " "	52
1 " "	54
2 " "	90A
1 " "	100
Electric Motor	

Model No. 1.187x

Electric Elevator

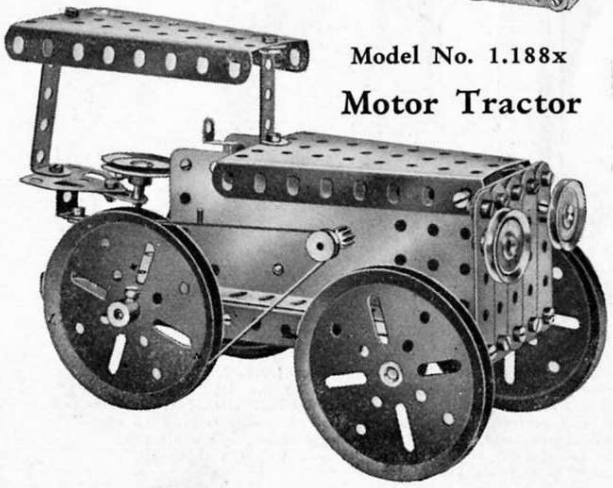


Parts required:

4 of No.	1
2 " "	2
6 " "	5
2 " "	12
2 " "	16
1 " "	17
2 " "	19B
2 of No.	22
34 " "	37
5 " "	48A
1 " "	52
2 " "	54
Electric Motor	

Model No. 1.188x

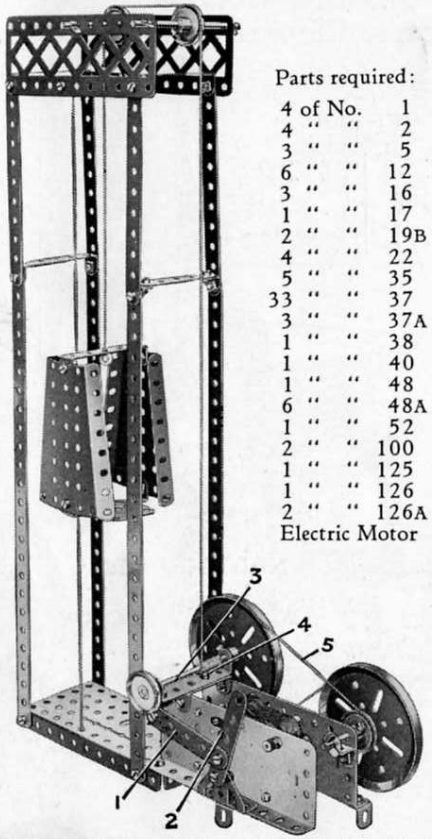
Motor Tractor



Parts required:

8 of No.	5
1 " "	10
2 " "	12
2 " "	16
1 " "	17
4 " "	19B
3 " "	22
1 " "	24
3 " "	35
23 " "	37
1 " "	48
2 " "	48A
1 " "	52
2 " "	54
2 " "	111C
2 " "	125
1 " "	126A
Electric Motor	

Model No. 1.189x Elevator

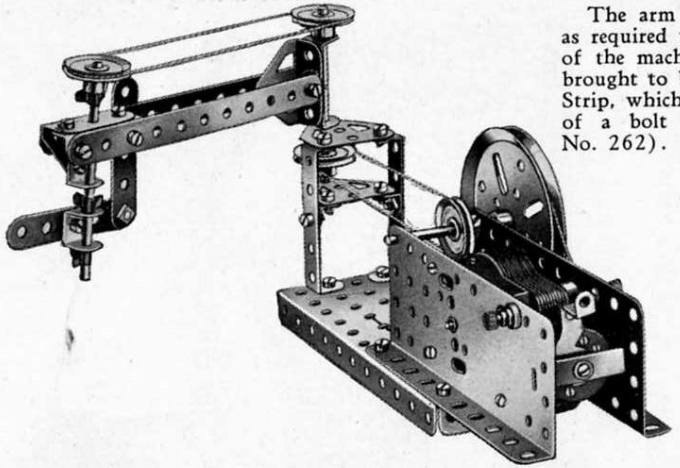


Parts required:

4 of No.	1
4 " "	2
3 " "	5
6 " "	12
3 " "	16
1 " "	17
2 " "	19B
4 " "	22
5 " "	35
33 " "	37
3 " "	37A
1 " "	38
1 " "	40
1 " "	48
6 " "	48A
1 " "	52
2 " "	100
1 " "	125
1 " "	126
2 " "	126A
Electric Motor	

The elevator is raised by means of the Electric Motor, which winds in the hoisting cord on the 3½" Axle Rod 3. The descent is accomplished by operating the lever 2, which is pivoted by means of the 2½" Strip 1 to the 2½" x ½" Double Angle Strip carrying the Rod 3. This Double Angle Strip is caused to swivel about the Bolt 4, which is provided with lock-nuts, and the Cord 5 is thus slackened sufficiently to allow the elevator to descend by its own weight without the necessity of stopping the Motor.

Model No. 1.190x Radial Drill

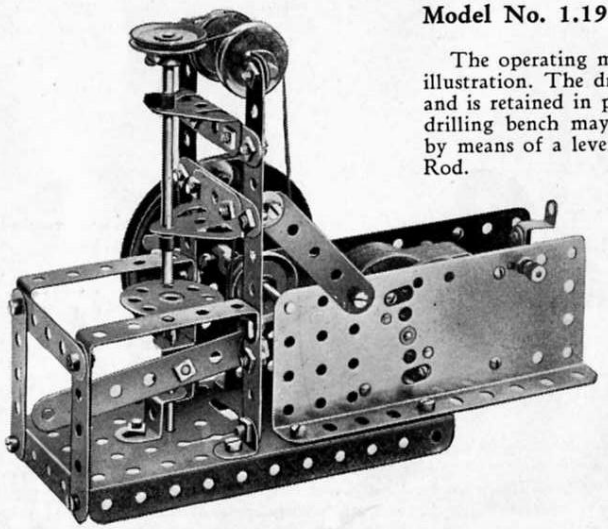


The arm that carries the drill can be swivelled as required without interfering with the operation of the machine. The drill itself may be raised or brought to bear on the work by means of a 2½" Strip, which is pivoted to a similar Strip by means of a bolt and lock-nuts (Standard Mechanism No. 262).

Parts required:

2 of No.	2	26 of No.	37
2 " "	5	2 " "	37A
1 " "	11	2 " "	38
6 " "	12	1 " "	48
2 " "	16	2 " "	48A
1 " "	17	1 " "	52
1 " "	19B	2 " "	126
4 " "	22	2 " "	126A
4 " "	35	Electric Motor	

Model No. 1.191x Drilling Machine



The operating mechanism is clearly shown in the illustration. The drill itself is in constant rotation, and is retained in position by Spring Clips, but the drilling bench may be raised or lowered as desired by means of a lever attached to its supporting Axle Rod.

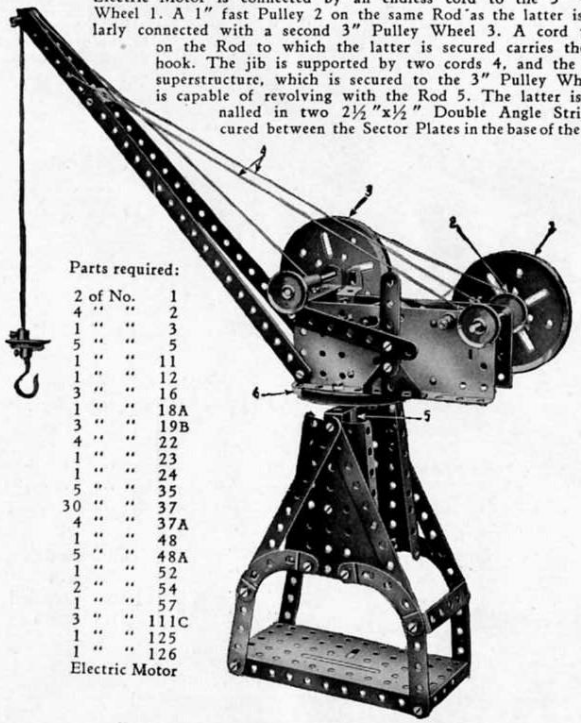
Parts required:

2 of No.	2	6 of No.	35
1 " "	3	31 " "	37
7 " "	5	2 " "	37A
1 " "	11	3 " "	38
7 " "	12	2 " "	48A
1 " "	16	1 " "	52
2 " "	17	1 " "	111C
1 " "	18A	1 " "	125
1 " "	19B	2 " "	126
4 " "	22	Electric Motor	
1 " "	24		

Model No. 192x

Elevated Jib Crane

A 1" fast Pulley Wheel secured to the armature spindle of the Electric Motor is connected by an endless cord to the 3" Pulley Wheel 1. A 1" fast Pulley 2 on the same Rod as the latter is similarly connected with a second 3" Pulley Wheel 3. A cord wound on the Rod to which the latter is secured carries the load hook. The jib is supported by two cords 4, and the whole superstructure, which is secured to the 3" Pulley Wheel 6, is capable of revolving with the Rod 5. The latter is journalled in two 2½"x½" Double Angle Strips secured between the Sector Plates in the base of the model.



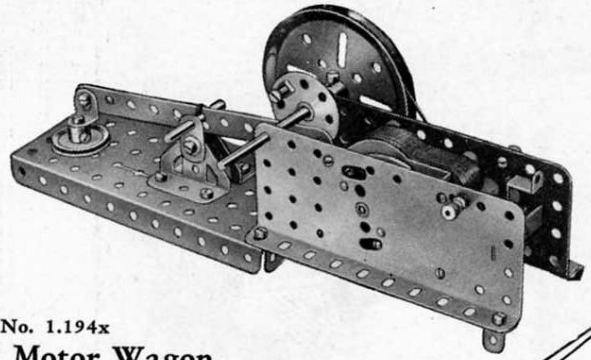
Parts required:

2	of No.	1
4	" "	2
1	" "	3
5	" "	5
1	" "	11
1	" "	12
3	" "	16
1	" "	18A
3	" "	19B
4	" "	22
1	" "	23
1	" "	24
5	" "	35
30	" "	37
4	" "	37A
1	" "	48
5	" "	48A
1	" "	52
2	" "	54
1	" "	57
3	" "	111C
1	" "	125
1	" "	126

Electric Motor

Model No. 1.193x

Automatic Hammer



Parts required:

1	of No.	2
2	" "	10
3	" "	12
1	" "	16
1	" "	18A
1	" "	19B
1	" "	22
1	" "	24
4	" "	35
11	" "	37
1	" "	52
3	" "	111C
2	" "	126

Electric Motor

Model No. 1.194x

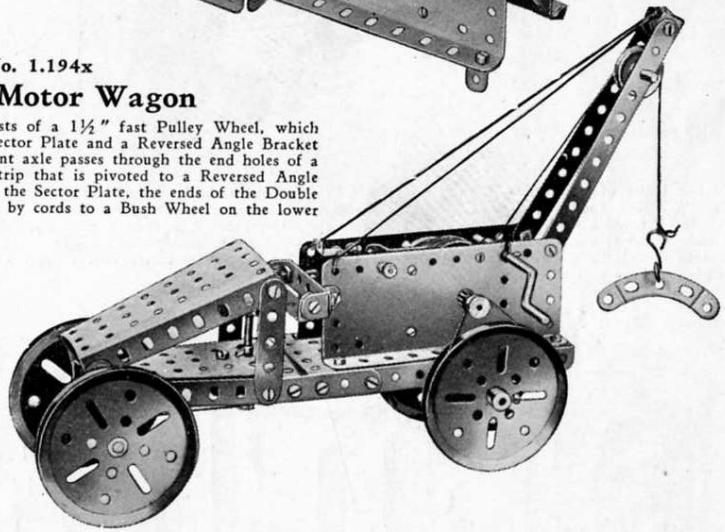
Breakdown Motor Wagon

The steering wheel consists of a 1½" fast Pulley Wheel, which is journalled in the lower Sector Plate and a Reversed Angle Bracket bolted to the Plate. The front axle passes through the end holes of a 2½"x½" Double Angle Strip that is pivoted to a Reversed Angle Bracket on the underside of the Sector Plate, the ends of the Double Angle Strip being connected by cords to a Bush Wheel on the lower end of the steering column.

Parts required:

2	of No.	2	1	of No.	19S
4	" "	5	2	" "	22
2	" "	10	1	" "	24
1	" "	11	4	" "	35
2	" "	12	36	" "	37
2	" "	16	3	" "	48A
1	" "	17	1	" "	52
1	" "	18A	2	" "	54
4	" "	19B	1	" "	57
			2	" "	126A

Electric Motor

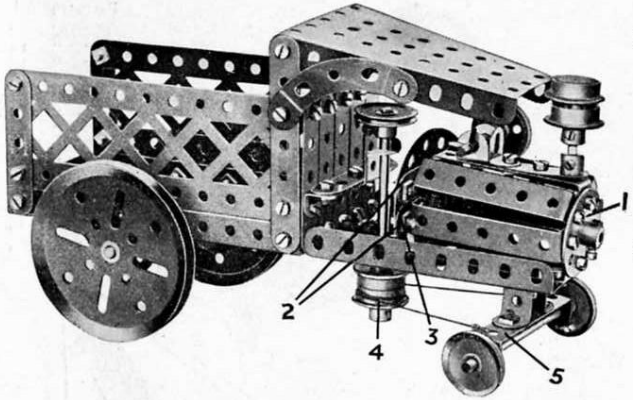


HOW TO CONTINUE

Do not consider that you have exhausted the possibilities of your No. 1X Meccano Outfit when you have made the 675 models here illustrated. With the experience you have gained you can now become an inventor and design entirely new models to your own ideas. If you strike trouble we will gladly place all our knowledge and experience at your disposal. Write to "Engineer Dept.," Meccano Co., Inc., Elizabeth, N. J.

You will probably wish to make bigger and more elaborate models and you can do this either by purchasing a No. 1A Meccano Accessory Outfit or some extra Meccano separate parts. You will find all the prices at the end of this book.

Model No. 2.1 Steam Truck

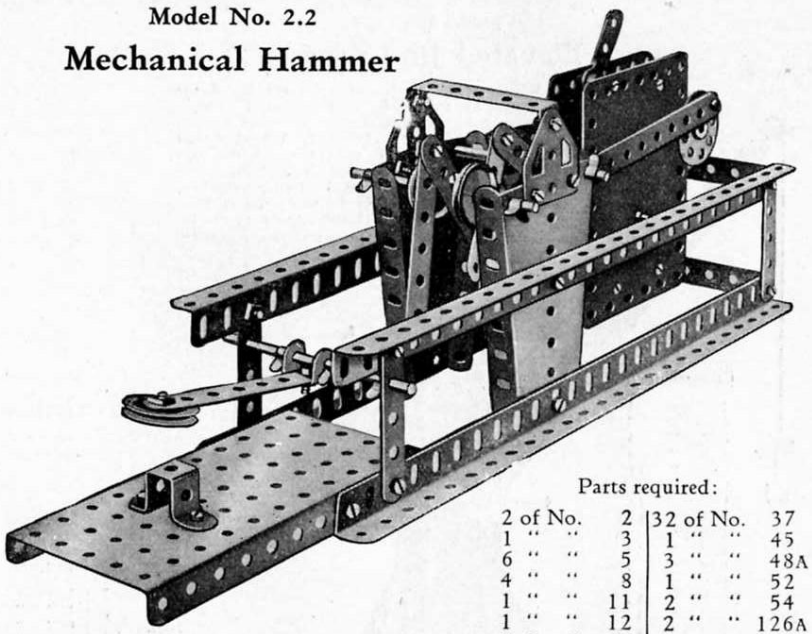


Parts required:

2	of No.	3
10	" "	5
2	" "	10
1	" "	11
3	" "	12
3	" "	16
1	" "	17
1	" "	18A
2	" "	19B
4	" "	20B
3	" "	22
1	" "	22A
1	" "	24
5	" "	35
60	" "	37
5	" "	37A
1	" "	45
8	" "	48A
1	" "	52
2	" "	54
1	" "	62
3	" "	90A
2	" "	100
4	" "	111C
1	" "	125
2	" "	126A

The boiler of the engine is built up of 2½"x½" Double Angle Strips bolted to the Bush Wheel 1 and to two 2½" Strips 2, which are joined together by Flat Brackets 3. A 2½" Curved Strip (small radius) is bolted to the upper Strip 2. A cord is passed completely round two ¾" Flanged Wheels 4 secured to the steering column, and its ends are tied to the 2½"x½" Double Angle Strip 5. The Double Bent Strip bolted to the Strip 5 is pivoted by a bolt and two nuts to the Sector Plate.

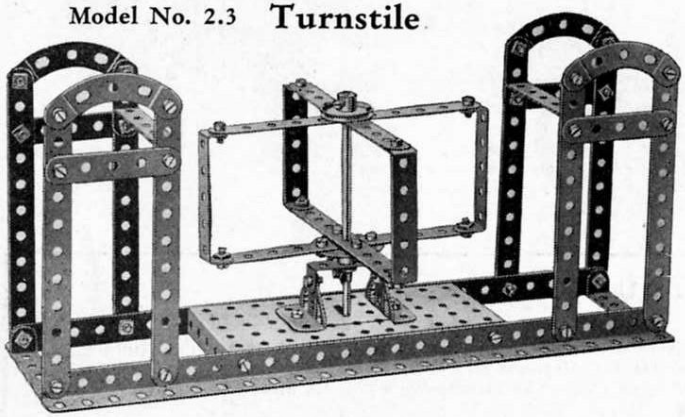
Model No. 2.2 Mechanical Hammer



Parts required:

2	of No.	2	32	of No.	37
1	" "	3	1	" "	45
6	" "	5	3	" "	48A
4	" "	8	1	" "	52
1	" "	11	2	" "	54
1	" "	12	2	" "	126A
3	" "	16			
4	" "	22	Clockwork		
1	" "	22A	Motor		
1	" "	24	(not included		
8	" "	35	in Outfit)		

Model No. 2.3 Turnstile



Parts required:

12	of No.	2
5	" "	5
1	" "	15A
1	" "	22
1	" "	24
44	" "	37
1	" "	48
8	" "	48A
1	" "	52
4	" "	90A
2	" "	99
2	" "	126

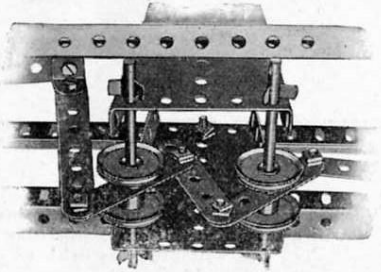
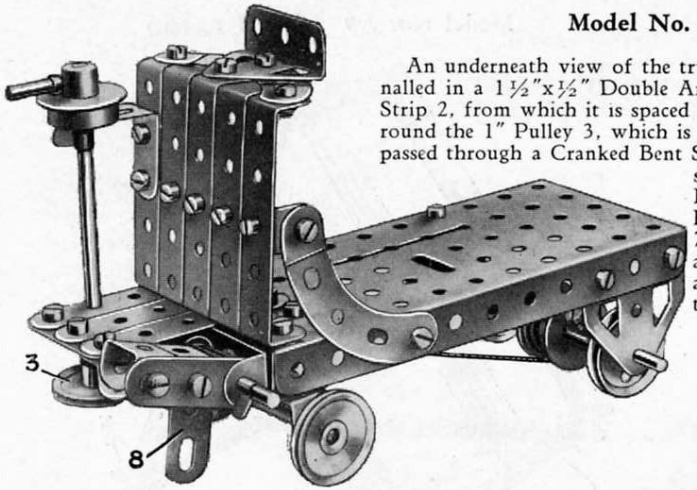


Fig. 2.2a

Model No. 2.4 Electric Truck



An underneath view of the truck is shown in Fig. 2.4a. The front axle is journalled in a 1½"x½" Double Angle Strip 1 that is free to turn on a Double Bent Strip 2, from which it is spaced by a ½" loose Pulley. A length of cord is wrapped round the 1" Pulley 3, which is secured to the end of the steering column, and then passed through a Cranked Bent Strip 4 and secured to the Double Angle Strip 1 as shown. The brake cord 5 is attached to the Double Bent Strip 2, wrapped several times round the ¾" Flanged Wheels 6, passed through the Angle Bracket 7, and is finally attached to the Crank 8. The operating pedal consists of Double Brackets bolted to another Crank that is secured to the same Rod as the Crank 8.

Parts required:

3	of No.	5	1	of No.	22A	7	of No.	48A
1	" "	6A	1	" "	23	1	" "	52
2	" "	11	4	" "	35	2	" "	62
1	" "	12	35	" "	37	3	" "	90A
1	" "	12A	2	" "	37A	1	" "	111C
3	" "	16	5	" "	38	1	" "	115
1	" "	17	1	" "	44	1	" "	126
3	" "	20B	1	" "	45	2	" "	126A
4	" "	22	1	" "	48			

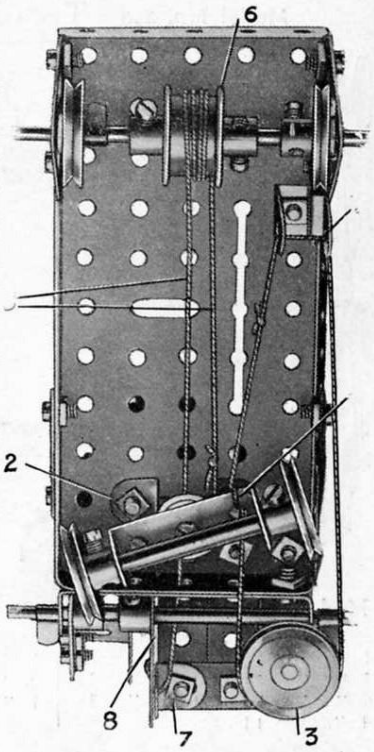
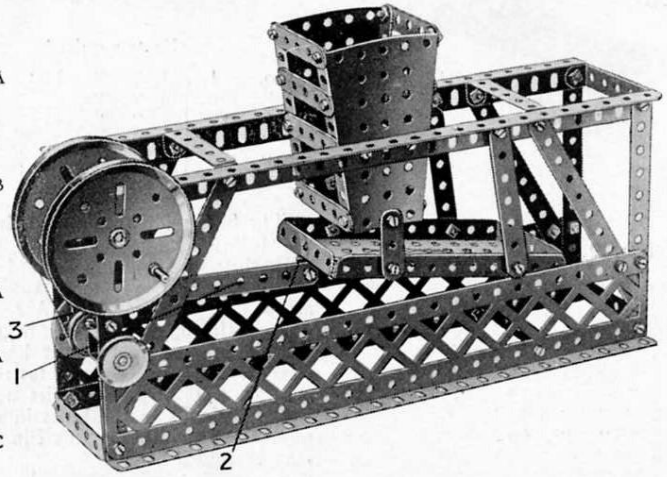


Fig. 2.4a

Model No. 2.5 Coal Sifter

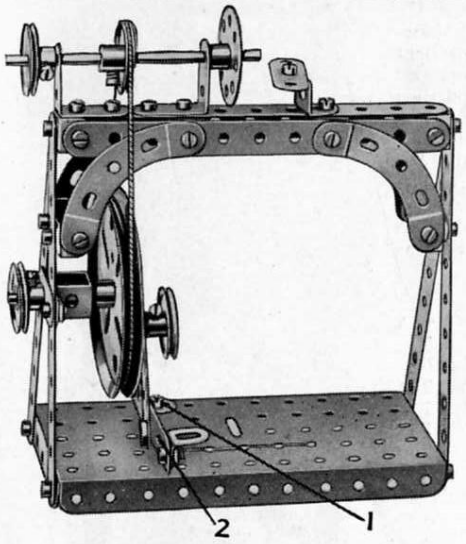
Parts required:

9	of No.	2
2	" "	3
8	" "	5
2	" "	6A
4	" "	8
1	" "	12
1	" "	16
1	" "	17
2	" "	19B
2	" "	22
1	" "	24
2	" "	35
54	" "	37
6	" "	37A
8	" "	38
1	" "	45
6	" "	48A
1	" "	52
2	" "	54
2	" "	99
6	" "	111C
1	" "	115



The 5½" Strip 1 is pivoted to the Angle Bracket 2 by a bolt and two nuts. The Angle Bracket in turn is bolted to the Flanged Plate, which is suspended in such a way that it is free to swing to and fro. The other end of the 5½" Strip is pivoted to the Bush Wheel 3.

Model No. 2.6 Treadle Lathe



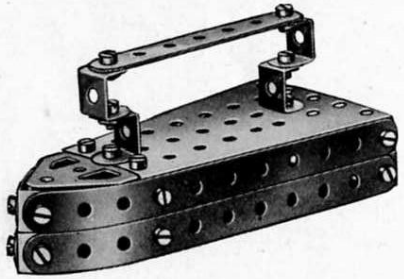
Parts required:

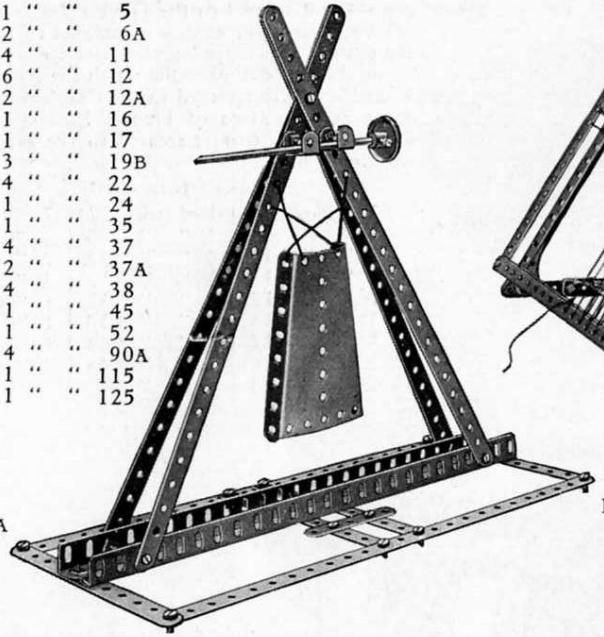
7	of No.	2
1	" "	3
1	" "	5
2	" "	6A
4	" "	11
6	" "	12
2	" "	12A
1	" "	16
1	" "	17
3	" "	19B
4	" "	22
1	" "	24
1	" "	35
34	" "	37
2	" "	37A
4	" "	38
1	" "	45
1	" "	52
4	" "	90A
1	" "	115
1	" "	125

Model No. 2.7 Smoothing Iron

Parts required:

4	of No.	2	2	of No.	12	1	of No. 48A
2	" "	3	20	" "	37	2	" " 54
6	" "	10	2	" "	38	1	" " 126
4	" "	11					



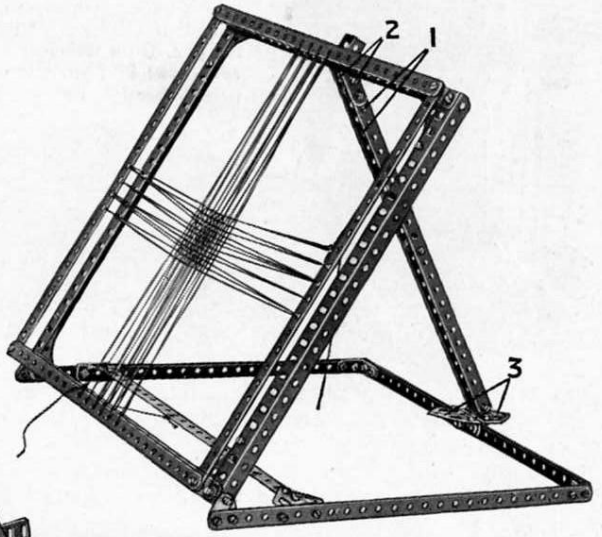


Model No. 2.8 Dinner Gong

Parts required:

6	of No.	1	1	of No.	15
4	" "	2	1	" "	22
2	" "	5	27	" "	37
2	" "	8	1	" "	54
2	" "	11			

Model No. 2.9 Mat Frame

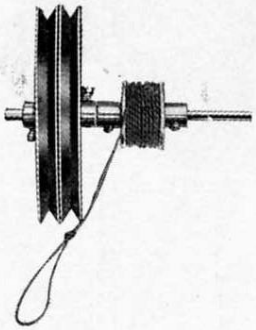


Parts required:

10	of No.	1	1	" "	18A	4	" "	90A
4	" "	8	54	" "	37	2	" "	111C
4	" "	10	2	" "	37A	1	" "	115
3	" "	11	2	" "	38	4	" "	125
5	" "	12	1	" "	45	2	" "	126
2	" "	12A	2	" "	62	2	" "	126A

The Strips 1 are hinged to the frame in the following manner. Two Cranks 2 with their bosses facing inward are bolted to the Strips 1 and two Angle Brackets are secured to the frame. A Rod is then pushed through the holes in the Angle Brackets and secured in the bosses of the Cranks. A Double Bracket fastened to the ends of the Strips 1 carries a Threaded Pin, which fits in the holes in the Trunnions 3. By removing this Pin, the frame may be folded flat.

Model No. 2.10 Spinning Top

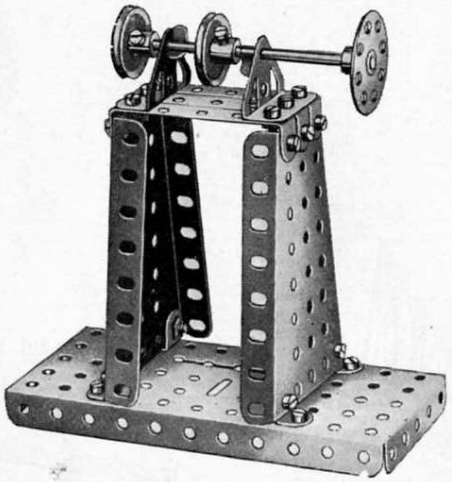


Parts required:

1	of No.	2
1	" "	16
2	" "	19B
2	" "	20
2	" "	37
1	" "	40
1	" "	62

The drum on which the cord is wound consists of two ¾" Flanged Wheels butted together. While the cord is being pulled, the top is held steadily on some smooth surface by means of the handle shown above. The handle is then lifted off, allowing the top to spin freely.

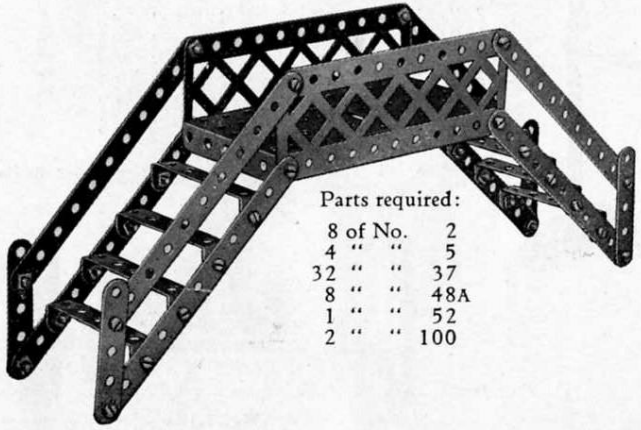
Model No. 2.11 Polishing Spindle



Parts required:

4	of No.	12	20	of No.	37
1	" "	16	3	" "	48A
2	" "	22	1	" "	52
1	" "	24	2	" "	54
2	" "	35	2	" "	126

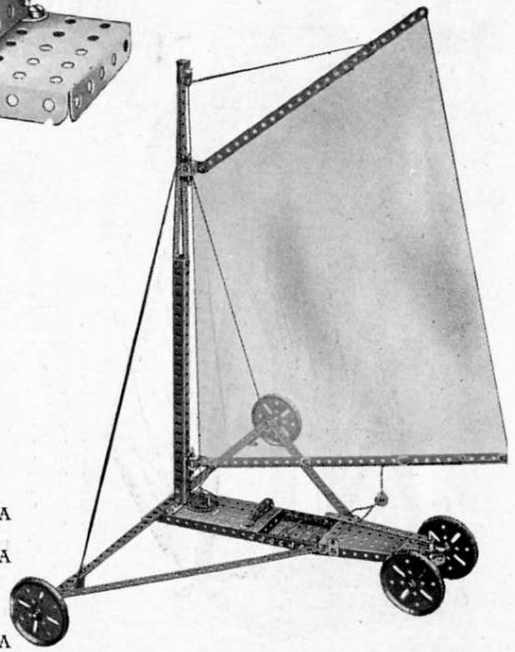
Model No. 2.12 High Level Bridge



Parts required:

8	of No.	2
4	" "	5
32	" "	37
8	" "	48A
1	" "	52
2	" "	100

Model No. 2.13 Sand Yacht

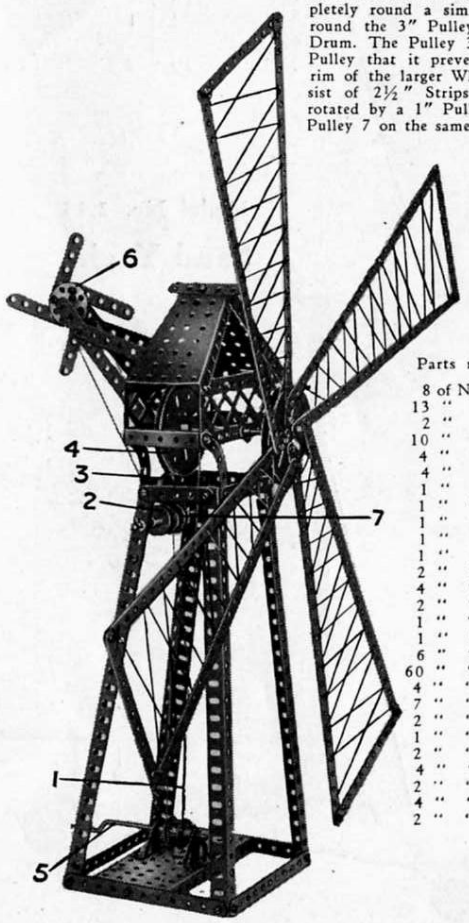


Parts required:

8	of No.	1	1	of No.	23
2	" "	2	1	" "	24
1	" "	5	12	" "	35
4	" "	8	60	" "	37
4	" "	10	9	" "	38
4	" "	11	8	" "	48A
12	" "	12	1	" "	62
2	" "	12A	1	" "	90A
3	" "	16	1	" "	115
1	" "	17	4	" "	125
2	" "	18A	1	" "	126
4	" "	19B	2	" "	126A

Model No. 2.14 Windmill

An endless cord 1 is given two or three turns round a drum consisting of two ¾" Flanged Wheels secured to the shaft of the Crank Handle 5. It then passes completely round a similar drum 2, over a 1" Pulley 3, round the 3" Pulley Wheel 4, and back to the lower Drum. The Pulley 3 is so arranged parallel to the 3" Pulley that it prevents the cord from slipping off the rim of the larger Wheel. The smaller vanes, which consist of 2½" Strips bolted to a Bush Wheel 6, are rotated by a 1" Pulley Wheel connected with a similar Pulley 7 on the same Rod as the drum 2.



Parts required:

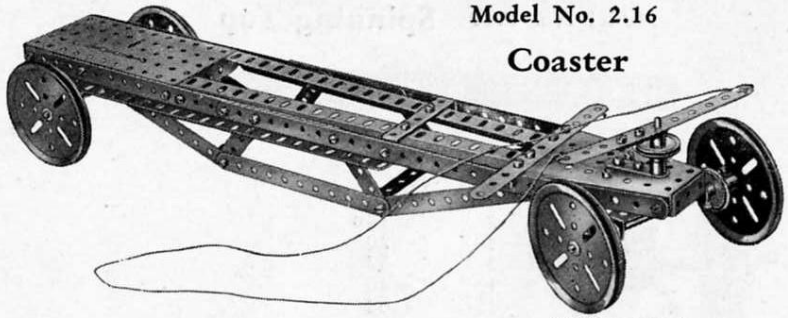
8	of No.	1
13	" "	2
2	" "	3
10	" "	5
4	" "	8
4	" "	12
1	" "	15
1	" "	15A
1	" "	16
1	" "	18A
1	" "	19S
2	" "	19B
4	" "	20
2	" "	22
1	" "	22A
1	" "	24
6	" "	35
60	" "	37
4	" "	37A
7	" "	38
2	" "	48A
1	" "	52
2	" "	54
4	" "	90A
2	" "	100
4	" "	111C
2	" "	126

Model No. 2.15 Towel Horse

Parts required:

6	of No.	1
4	" "	2
2	" "	8
4	" "	10
4	" "	12
2	" "	22A
28	" "	37
2	" "	37A
8	" "	38
4	" "	90A
2	" "	111C

Model No. 2.16 Coaster



Parts required:

2	of No.	1
8	" "	2
4	" "	5
4	" "	8
1	" "	15
1	" "	15A
1	" "	17
4	" "	19B
3	" "	22
1	" "	23
1	" "	24
44	" "	37
4	" "	38
1	" "	48
4	" "	48A
1	" "	52
2	" "	54
2	" "	62
2	" "	126

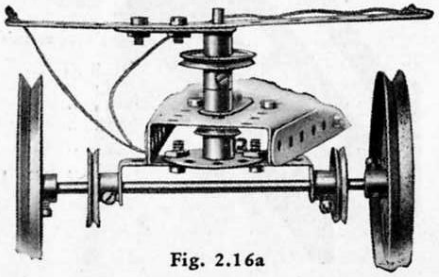


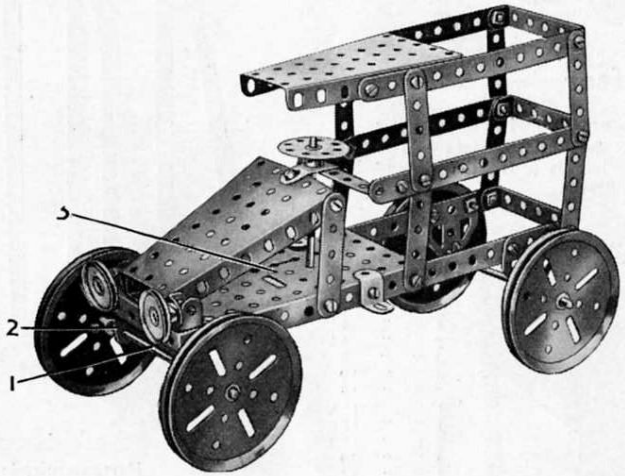
Fig. 2.16a

Model No. 2.17

Motor Van

Parts required:

6 of No.	2	3 of No.	22	6 of No.	48A
10 " "	5	1 " "	24	1 " "	52
1 " "	10	5 " "	35	2 " "	54
2 " "	12	35 " "	37	3 " "	111C
1 " "	15	2 " "	37A	2 " "	125
1 " "	15A	1 " "	38	2 " "	126A
1 " "	16	1 " "	45		
4 " "	19B	1 " "	48		



The Axle Rod 1 is journalled in a 2½"x½" Double Angle Strip 2. The latter is bolted to a Double Bent Strip that is pivoted to the Flanged Plate 3 by a bolt and two nuts. Steering is effected by a cord attached to the ends of the Double Angle Strip 2 and passed round a 1" Pulley Wheel fastened to the lower end of the steering Rod.

Model No. 2.18

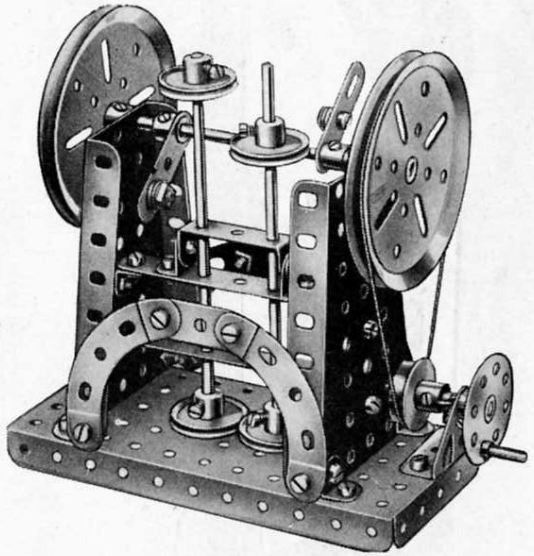
Easel

Parts required:

5 of No.	1
3 " "	2
2 " "	3
3 " "	5
4 " "	12
2 " "	12A
1 " "	15A
2 " "	22
19 " "	37
4 " "	38

Model No. 2.19

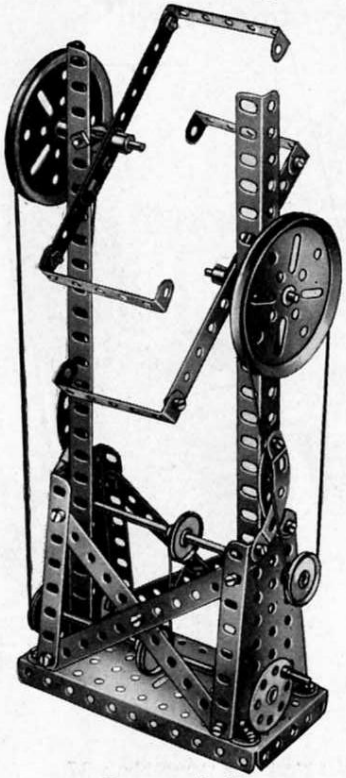
Stamping Mill



Parts required:

2 of No.	3	30 of No.	37		
2 " "	6A	2 " "	37A		
10 " "	12	11 " "	38		
2 " "	15	1 " "	48		
1 " "	15A	1 " "	52		
1 " "	17	2 " "	54		
2 " "	19B	2 " "	62		
1 " "	20	4 " "	90A		
4 " "	22	2 " "	111C		
1 " "	24	1 " "	115		
1 " "	35	1 " "	126		

Model No. 2.20 Candy Puller



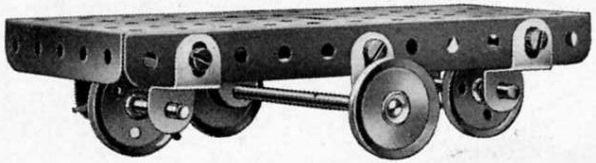
Parts required:

6 of No.	2	36 of No.	37
2 " "	8	4 " "	38
6 " "	12	4 " "	48A
2 " "	15	1 " "	52
2 " "	17	2 " "	54
2 " "	19B	2 " "	62
4 " "	22	4 " "	90A
1 " "	24	1 " "	115
3 " "	35		

Model No. 2.21 Revolving Truck

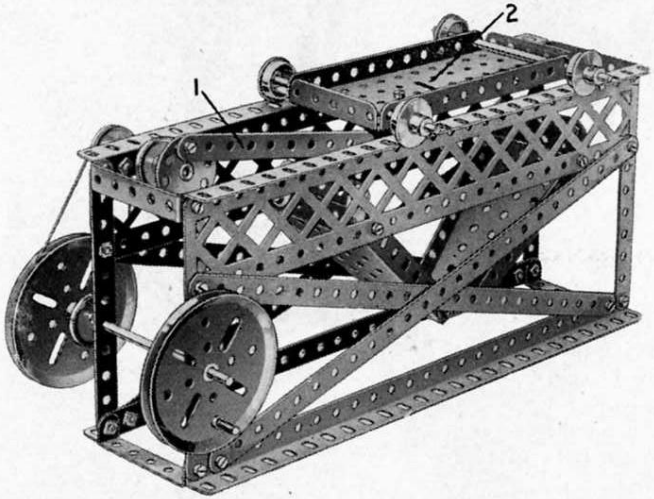
Parts required:

1 of No.	16	4 of No.	35
2 " "	17	6 " "	37
2 " "	22	1 " "	52
2 " "	22A	4 " "	125



Model No. 2.22 Sifter

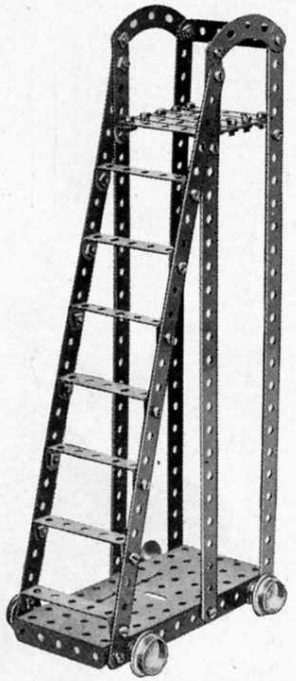
The 5½" Strip 1 is pivoted by a bolt and two nuts (S.M. 262) to the Bush Wheel and also to a Trunnion bolted to the under-surface of the Flanged Plate 2. The Rod carrying the Bush Wheel is journalled in one of the side Girders and through a Double Bent Strip.



Parts required:

4 of No.	1
5 " "	2
4 " "	5
2 " "	6A
4 " "	8
4 " "	10
2 " "	15
1 " "	15A
1 " "	17
2 " "	19B
4 " "	20
3 " "	22
1 " "	24
4 " "	35
36 " "	37
4 " "	37A
1 " "	38
1 " "	44
4 " "	48A
1 " "	52
2 " "	54
2 " "	99
2 " "	111C
1 " "	115
1 " "	126

Model No. 2.23 Ladder on Wheels



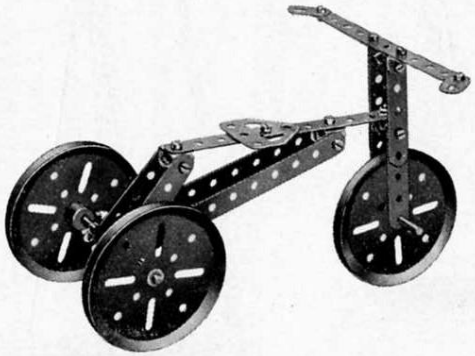
Parts required:

6 of No.	1
7 " "	5
4 " "	12
2 " "	16
4 " "	20
40 " "	37
4 " "	38
8 " "	48A
1 " "	52
2 " "	90A

Model No. 2.24
Tricycle

Parts required:

4 of No.	2		3 of No.		19B
6 " "	5		2 " "		35
2 " "	10		15 " "		37
3 " "	11		2 " "		37A
2 " "	12		1 " "		111C
1 " "	16		1 " "		126A
1 " "	18A				

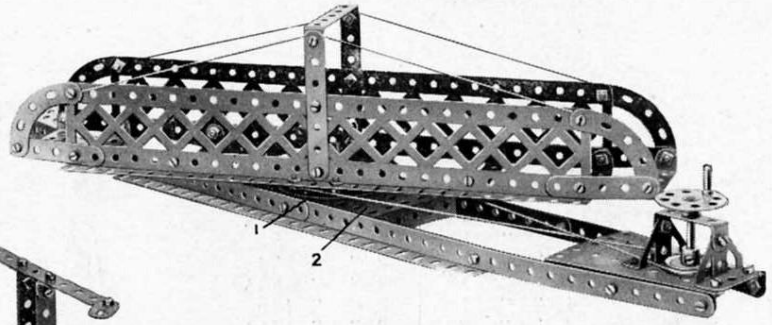


Parts required:

2 of No.	2		1 of No.		35
2 " "	5		23 " "		37
2 " "	6A		2 " "		37A
2 " "	10		3 " "		48A
1 " "	11		1 " "		52
3 " "	16		2 " "		54
4 " "	19B		2 " "		100
1 " "	22		1 " "		111C
1 " "	24		2 " "		126A

The front axle is journalled in a 2½" x½" Double Angle Strip that is pivoted by means of a bolt and lock-nuts (Standard Mechanism No 263) to a Double Bracket bolted to the lower Sector Plate. A cord passes completely round a 1" Pulley secured to the lower end of the steering column, and is tied to the ends of the Double Angle Strip.

Model No. 2.25
Turntable

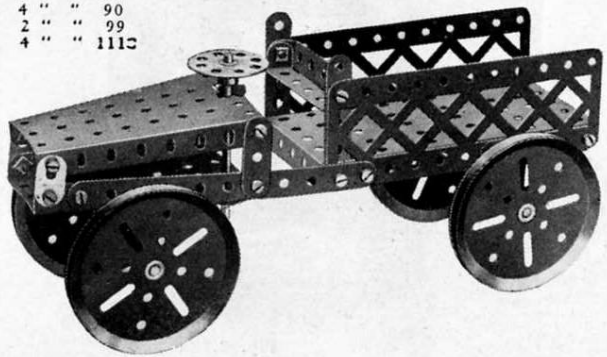


Parts required:

4 of No.	1		
2 " "	3		
8 " "	5		
4 " "	8		
1 " "	17		
1 " "	18A		
1 " "	19B		
3 " "	22		
1 " "	24		
45 " "	37		
4 " "	37A		
4 " "	38		
1 " "	48		
7 " "	48A		
1 " "	52		
2 " "	54		
4 " "	90		
2 " "	99		
4 " "	111C		

The two sides of the revolving portion are joined in the middle by two pairs of 2½" Strips, each pair being overlapped three holes and bolted to the 3" Pulley Wheel 1. An Axle Rod secured in the latter is journalled in the bottom plate 2 and retained in position by a Collar and set-screw beneath the plate.

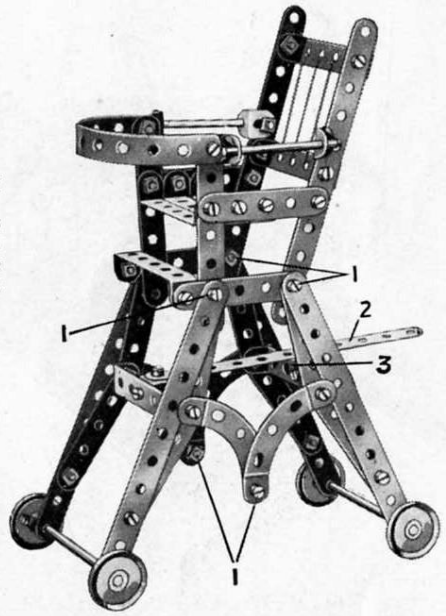
Model No. 2.27
Motor Truck



Model No. 2.26
Baby Chair

Parts required:

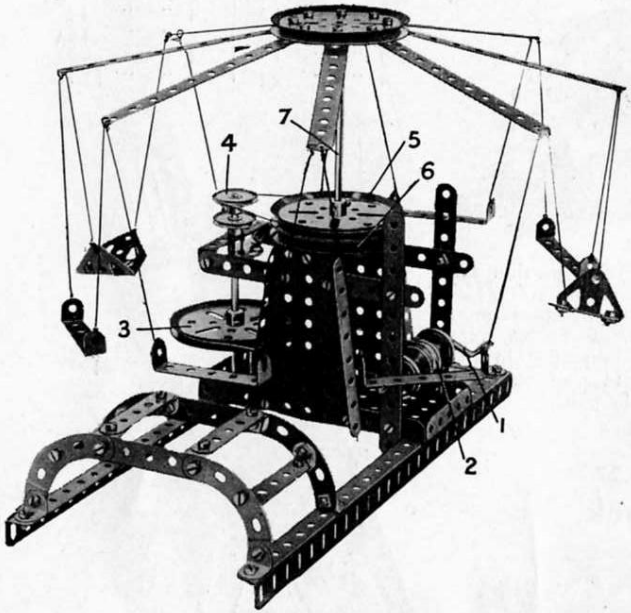
8 of No.	2		4 of No.		35
2 " "	3		35 " "		37
12 " "	5		2 " "		37A
6 " "	12		4 " "		38
2 " "	16		8 " "		48A
2 " "	17		4 " "		90A
4 " "	22		1 " "		115



The bolts 1 are all provided with lock-nuts (see Standard Mechanism No. 263) so that the various Strips are able to pivot about them. Different holes in the 5½" Strip 2 can be made to engage a Threaded Pin secured to an Angle Bracket bolted at the point 3, so that the height of the chair may be varied as desired.

Model No. 2.28

Roundabout



Parts required:

13 of No.		2	4 of No.		22
6	" "	5	1	" "	24
2	" "	8	48	" "	37
12	" "	12	7	" "	48A
2	" "	12A	1	" "	52
2	" "	15	2	" "	54
1	" "	19	4	" "	90A
4	" "	19B	2	" "	126
2	" "	20	2	" "	126A

When the Crank Handle 1 is turned, the drum 2 (formed by butting together two ¾" Flanged Wheels) turns the 3" Pulley Wheel 3 by means of an endless cord. The 1" fast Pulley Wheel 4 similarly turns a second 3" Pulley Wheel 5 resting on another 3" Pulley Wheel 6 (see Fig. 51a). The end of the Axle Rod 7 is quite free to revolve in the boss of the lower 3" Pulley Wheel 6.

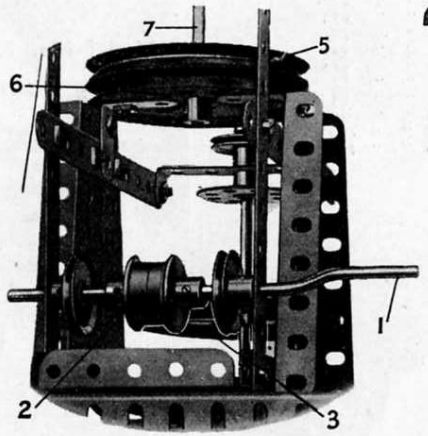
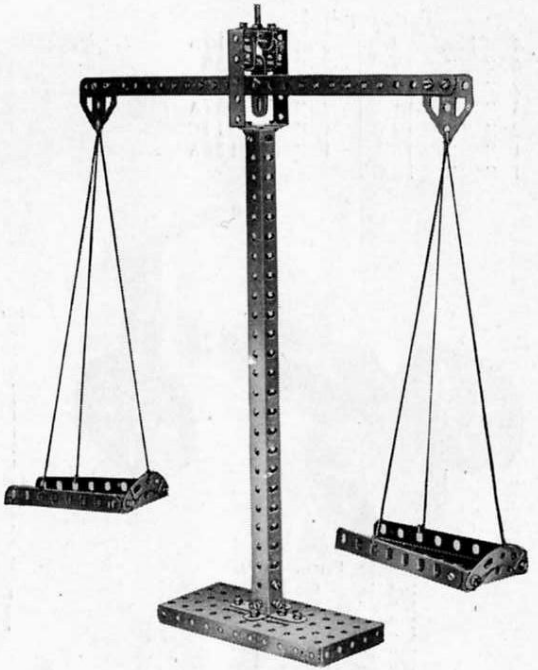


Fig. 2.28a

Model No. 2.29

Scales



Parts required:

2 of No.		1	4 of No.		38
1	" "	6A	1	" "	40
2	" "	8	1	" "	45
2	" "	10	4	" "	48
1	" "	11	1	" "	52
2	" "	12	2	" "	54
2	" "	12A	2	" "	62
2	" "	18A	2	" "	90A
2	" "	35	1	" "	115
31	" "	37	2	" "	126A

Model No. 2.30

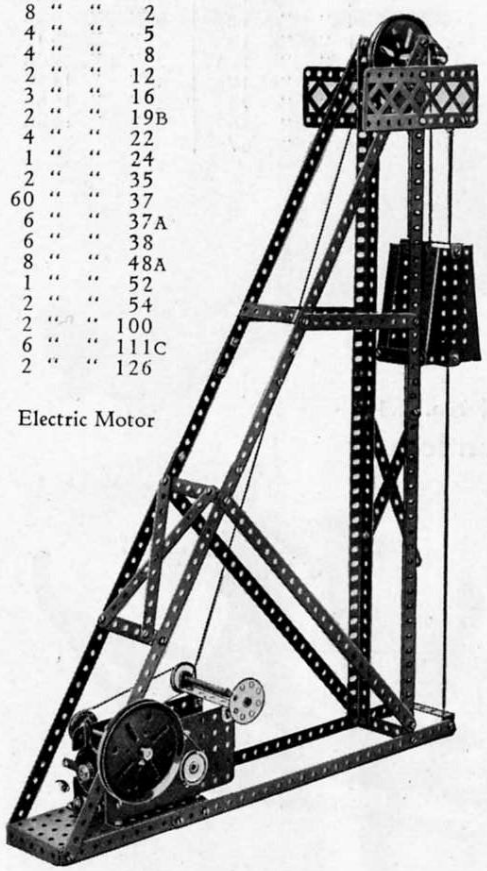
Pit Head Gear

(Electrically Operated)

Parts required:

8	of No.	1
8	" "	2
4	" "	5
4	" "	8
2	" "	12
3	" "	16
2	" "	19B
4	" "	22
1	" "	24
2	" "	35
60	" "	37
6	" "	37A
6	" "	38
8	" "	48A
1	" "	52
2	" "	54
2	" "	100
6	" "	111C
2	" "	126

Electric Motor

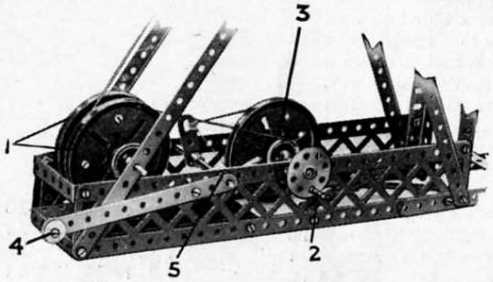


Model No. 2.31

Pit Head Gear

(Hand Operated)

Model No. 2.31 is an alternative construction of the base of model No. 2.30, and shows how the Electric Motor may be dispensed with if necessary. Two 3" Pulley Wheels 1 are bolted together by four Double Brackets to form a drum on which the hoisting cord is wound. The cage is raised or lowered on operation of the handle 2, which is connected to the winding drum by an ordinary belt drive. The cage is prevented from overhauling by a band brake that acts on the groove of a third 3" Pulley Wheel 3. The brake normally is applied by the weight of the ½" loose Pulley Wheel 4, which is secured to the end of a 5½" Strip that is bolted to the Crank 5.



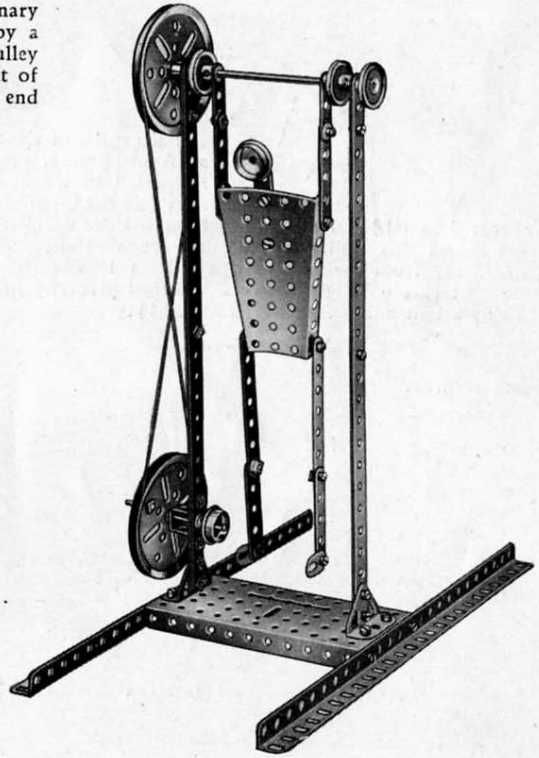
Parts required:

6	of No.	1	60	of No.	37
7	" "	2	6	" "	37A
3	" "	5	8	" "	48A
4	" "	8	1	" "	52
4	" "	11	2	" "	54
6	" "	12	2	" "	62
4	" "	16	2	" "	99
4	" "	19B	2	" "	100
4	" "	22	6	" "	111C
1	" "	23	1	" "	115
1	" "	24	2	" "	126A
3	" "	35			

Model No. 2.32 **Acrobat**

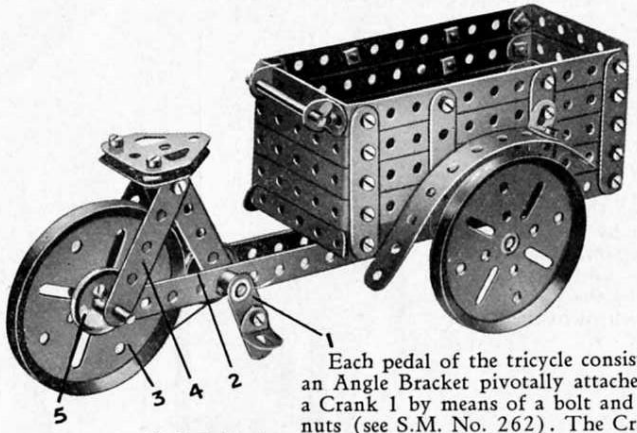
Parts required:

4	of No.	1	30	of No.	37
2	" "	3	4	" "	37A
5	" "	5	5	" "	38
2	" "	8	1	" "	45
2	" "	10	1	" "	52
1	" "	15	1	" "	54
2	" "	19B	2	" "	62
2	" "	20	1	" "	115
3	" "	22	2	" "	126



Model No. 2.33

Carrier Tricycle



Each pedal of the tricycle consists of an Angle Bracket pivotally attached to a Crank 1 by means of a bolt and two nuts (see S.M. No. 262). The Cranks are secured to a 1½" Axle Rod carrying a 1" fast Pulley Wheel 2. A cord passes round this Pulley and around the 3" Pulley Wheel 3, which is spaced away from the 2½" Strips 4 by a 1" fast Pulley Wheel 5. The Double Bracket 6 (Fig. 2.33a) is attached pivotally to the lower framework by a bolt and lock-nuts (S.M. 263).

Parts required:

12	of No.	2
12	" "	5
2	" "	11
6	" "	12
1	" "	16
1	" "	17
2	" "	18A
3	" "	19B
2	" "	22
45	" "	37
6	" "	37A
8	" "	48A
1	" "	52
2	" "	62
2	" "	90A
3	" "	111C
2	" "	126

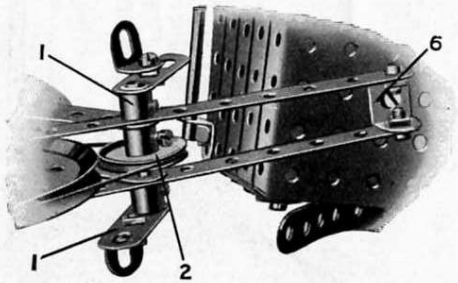
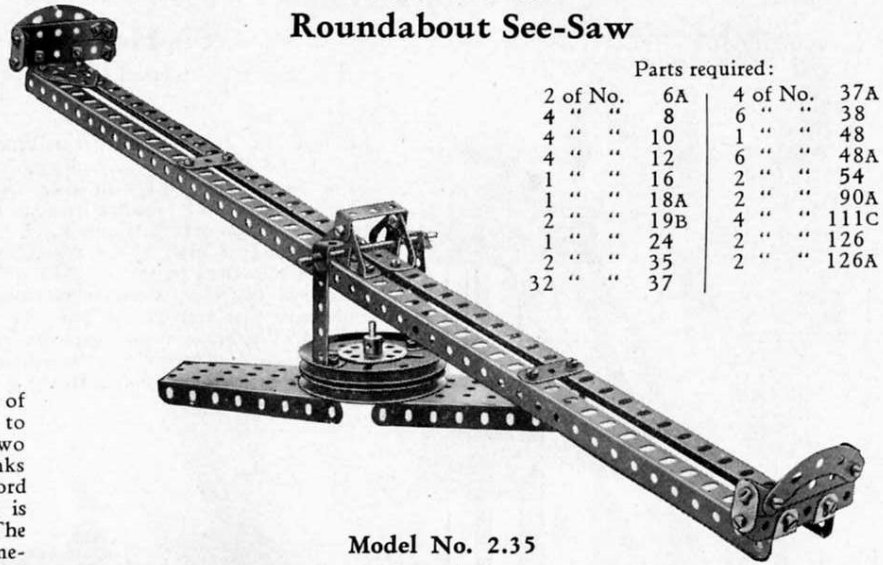


Fig. 2.33a

Model No. 2.34

Roundabout See-Saw



Parts required:

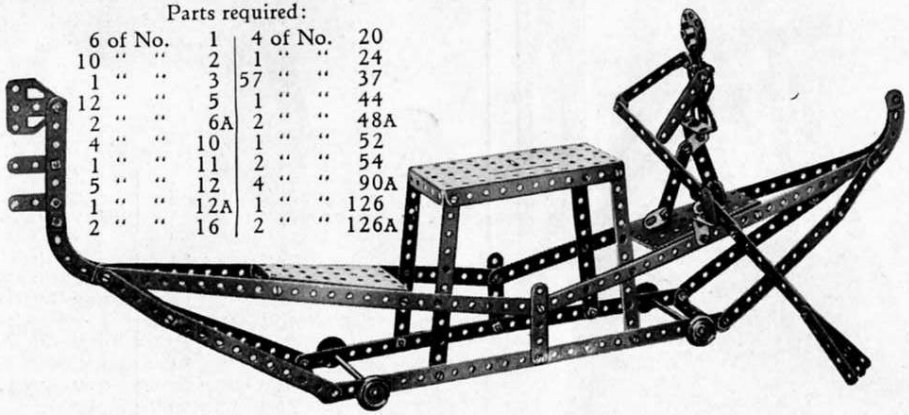
2	of No.	6A	4	of No.	37A
4	" "	8	6	" "	38
4	" "	10	1	" "	48
4	" "	12	6	" "	48A
1	" "	16	2	" "	54
1	" "	18A	2	" "	90A
2	" "	19B	4	" "	111C
1	" "	24	2	" "	126
2	" "	35	2	" "	126A
32	" "	37			

Model No. 2.35

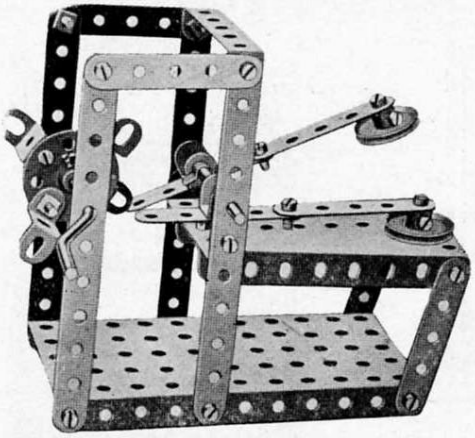
Gondola

Parts required:

6	of No.	1	4	of No.	20
10	" "	2	1	" "	24
1	" "	3	57	" "	37
12	" "	5	1	" "	44
2	" "	6A	2	" "	48A
4	" "	10	1	" "	52
1	" "	11	2	" "	54
5	" "	12	4	" "	90A
1	" "	12A	1	" "	126
2	" "	16	2	" "	126A



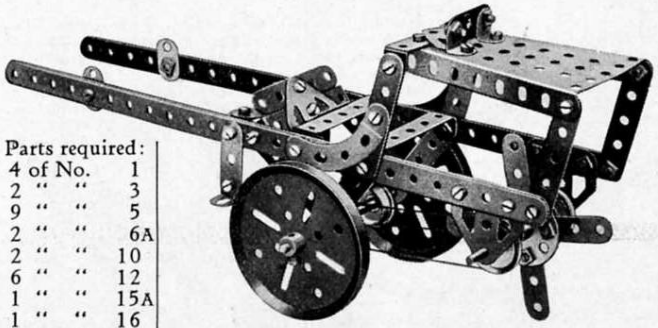
Model No. 2.36 Double Drop Hammer



Parts required:

4	of No.	2
8	" "	5
2	" "	11
1	" "	16
1	" "	19
4	" "	22
1	" "	24
4	" "	35
23	" "	37
6	" "	38
2	" "	48A
1	" "	52
1	" "	54
2	" "	111C
4	" "	125

Model No. 2.37 Hay Tedder



Parts required:

4	of No.	1
2	" "	3
9	" "	5
2	" "	6A
2	" "	10
6	" "	12
1	" "	15A
1	" "	16
2	" "	19B
2	" "	20
2	" "	22
1	" "	24
2	" "	35
34	" "	37
6	" "	37A
4	" "	38
4	of No.	48A
1	" "	54
3	" "	90A
6	of No.	111C
2	" "	126
2	" "	126A

Model No. 2.38 Dwarf Derrick

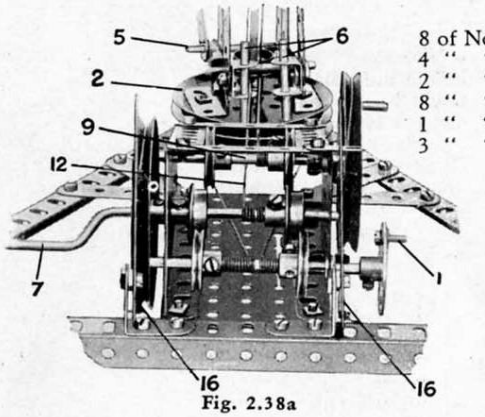


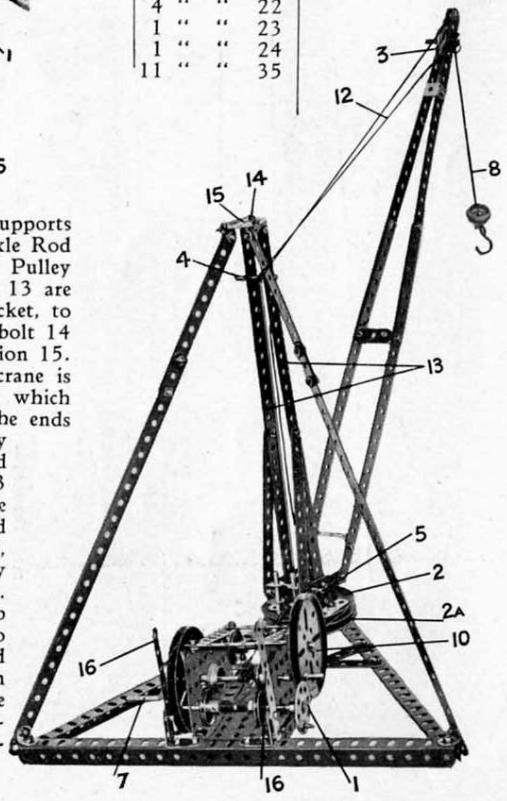
Fig. 2.38a

Parts required:

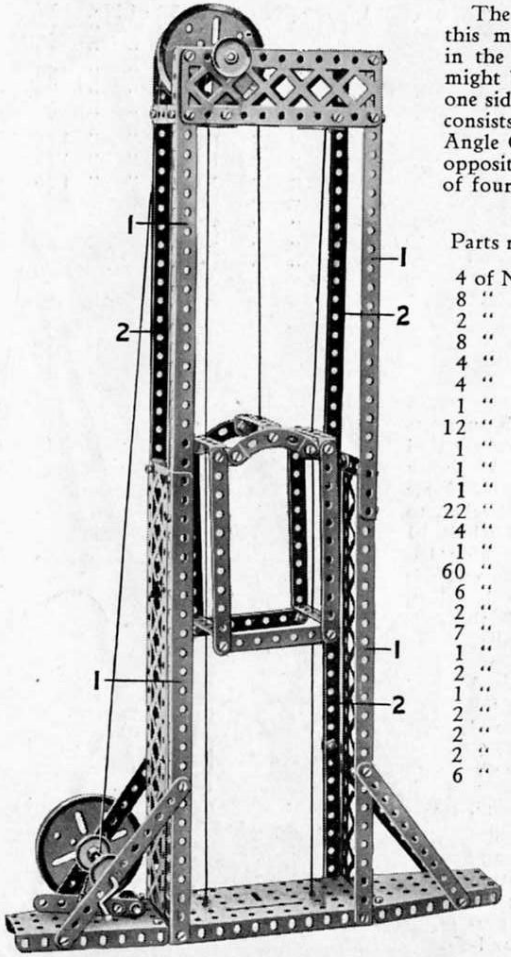
8	of No.	1
4	" "	2
2	" "	3
8	" "	5
1	" "	6A
3	" "	8
2	of No.	10
4	" "	11
6	" "	12
2	" "	12A
3	" "	16
2	" "	17
4	" "	18A
4	" "	19B
4	" "	20
4	" "	22
1	" "	23
1	" "	24
11	" "	35
58	of No.	37
3	" "	37A
5	" "	38
1	" "	52
2	" "	54
1	" "	57
1	" "	111C
1	" "	115
2	" "	126

The 3" Pulley Wheel 2, which supports the jib, is free to turn on a short Axle Rod secured in the boss of the lower 3" Pulley Wheel 2a. The vertical 12½" Strips 13 are bolted at their tops to a Double Bracket, to the centre hole of which is secured a bolt 14 that is free to turn in the Flat Trunnion 15.

The swivelling movement of the crane is carried out by turning the handle 1, which simultaneously winds and unwinds the ends of a cord passing round the 3" Pulley Wheel 2 (see Fig. 2.38a). The cord 12, which is tied to the Flat Bracket 3 at the head of the jib, passes over the 2" Rod 4, under a similar Rod 5, and between two vertical 2" Rods 6, which acts as guides, and is finally wound on to the Crank Handle 7. Hence on operation of the latter the jib is raised or lowered. The cord 8 also passes round the Rods 4, 5, and 6, and is wound on to the Rod 9. Operation of the handle 10 raises and lowers the Hook. The cords 8 and 12 are prevented from unwinding by band-and-pulley brakes 16.



Model No. 2.39 Elevator



The construction of this model is fairly clear in the illustration, but it might be pointed out that one side of the framework consists of four 12½" Angle Girders 1 while the opposite side is composed of four 12½" Strips 2.

Parts required:

4	of No.	1
8	" "	2
2	" "	3
8	" "	5
4	" "	8
4	" "	10
1	" "	11
12	" "	12
1	" "	16
1	" "	18A
1	" "	19S
22	" "	19B
4	" "	22
1	" "	35
60	" "	37
6	" "	37A
2	" "	38
7	" "	48A
1	" "	52
2	" "	54
1	" "	62
2	" "	90A
2	" "	99
2	" "	100
6	" "	111C

Model No. 2.40 Fire Escape

Parts required:

2	of No.	1
12	" "	2
1	" "	3
10	" "	5
4	of No.	8
2	" "	10
7	" "	12
2	" "	12A
4	" "	16
4	" "	19B
1	" "	19S
3	" "	22
1	" "	23
1	" "	24
5	" "	35
60	" "	37
6	" "	37A
9	" "	38
1	" "	44
6	" "	111C
1	" "	115
2	" "	125

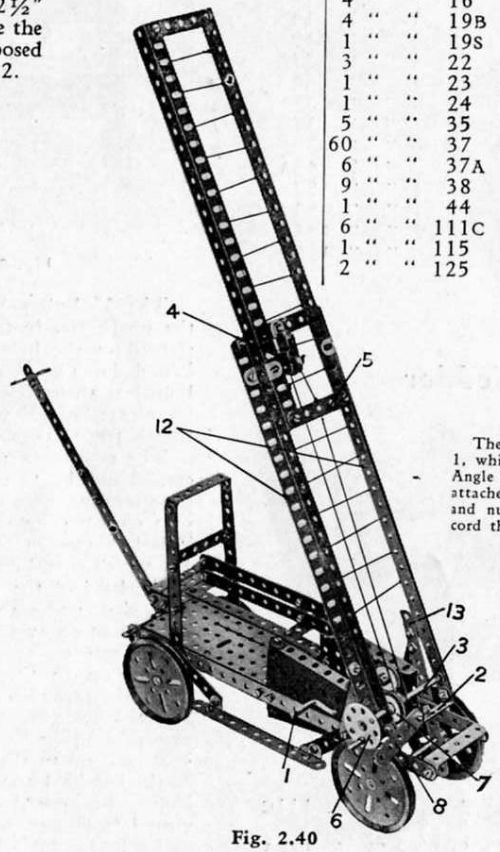


Fig. 2.40

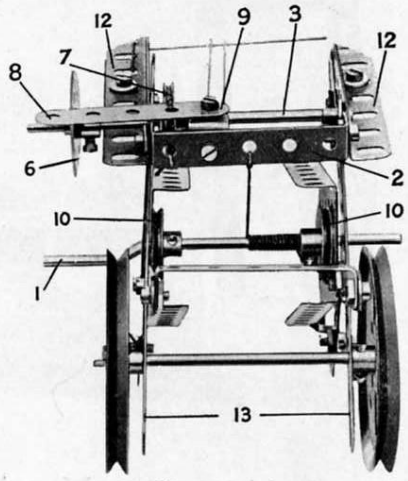


Fig. 2.40a

The ladder is elevated on operation of the Crank Handle 1, which winds in a cord tied to the Double Angle Strip 2. Angle Brackets bolted to the 12½" Angle Girders 12 are attached pivotally to the 5½" Strips 13 by means of bolts and nuts (S.M. 262), and the action of winding in the cord thus causes the ladder to swing upward. It is prevented from falling by the friction of the 1" Pulley Wheels 10 (Fig. 2.40a), which press against the two Sector Plates. When the ladder is fully elevated, its lower ends act as brakes to prevent the road wheels from revolving.

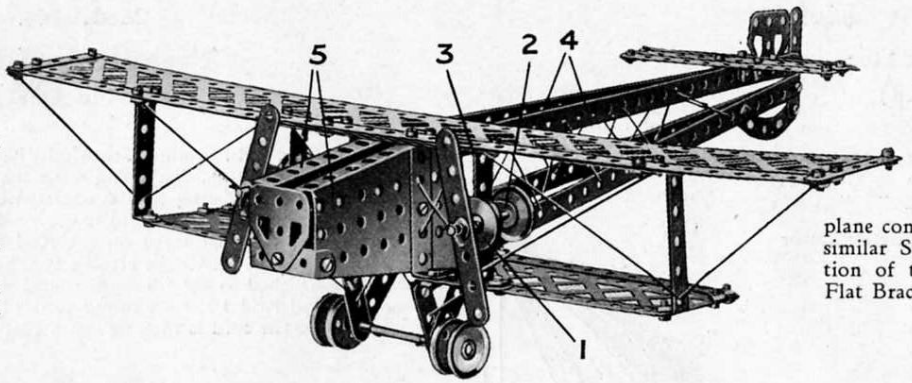
A second cord is wound upon the Rod 3. One end is then carried over the ½" loose Pulley Wheel 4 and tied to the 2½" Strip 5, the opposite end being carried directly to the same Strip and secured to it. When the handle 6 is turned, the two ends of the cord are wound and unwound simultaneously, and the ladder is extended or shortened as required. A permanent brake is provided by a cord passing over the 1" Pulley Wheel 7 and having both its ends secured to the 2½" Strip 8. The Strip 8 is bolted firmly to the Angle Bracket 9 (Fig. 2.40a) and keeps the brake continuously in action.

Model No. 2.41

Aeroplane

Parts required:

7	of No.	1	4	of No.	22
2	" "	2	2	" "	22A
2	" "	3	8	" "	35
7	" "	5	58	" "	37
2	" "	6A	6	" "	38
8	" "	10	1	" "	48
2	" "	11	6	" "	48A
8	" "	12	2	" "	54
1	" "	16	1	" "	90A
2	" "	17	2	" "	126A
2	" "	20B			



Each engine is represented by a ¾" Flanged Wheel 1 and a 1" fast Pulley Wheel secured to a 2" Rod journalled in a Double Bracket 2, which is bolted to the 2½"x½" vertical Double Angle Strip 3. The 12½" Strips 4 of the fuselage proper are bolted to the two Sector Plates 5, and also by means of Angle Brackets to the wings. The tail plane consists of two 5½" Strips to which a similar Strip, representing the movable portion of the plane, is attached by means of Flat Brackets.

Model No. 2.42 **Anti-Aircraft Gun**

The general construction of the model will be made clear by reference to Figures 2.42a and 2.42b. Rotation of the handle 1 causes the gun to revolve on the 3" Pulley Wheel 2. The barrel of the gun is so balanced on the Axle Rod 3 that it tends to fall by its own weight, but is prevented from doing so by a cord 4 tied to the gun close to the breech and wound on the 3½" Rod 5. By turning the Pulley Wheels 6 the muzzle is raised or allowed to fall.

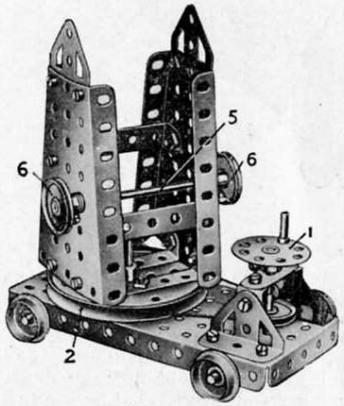


Fig. 2.42a

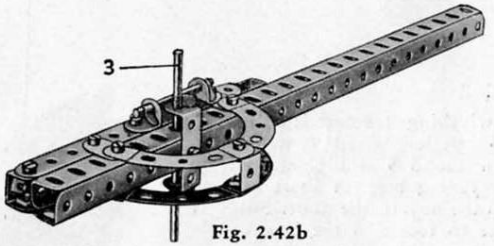
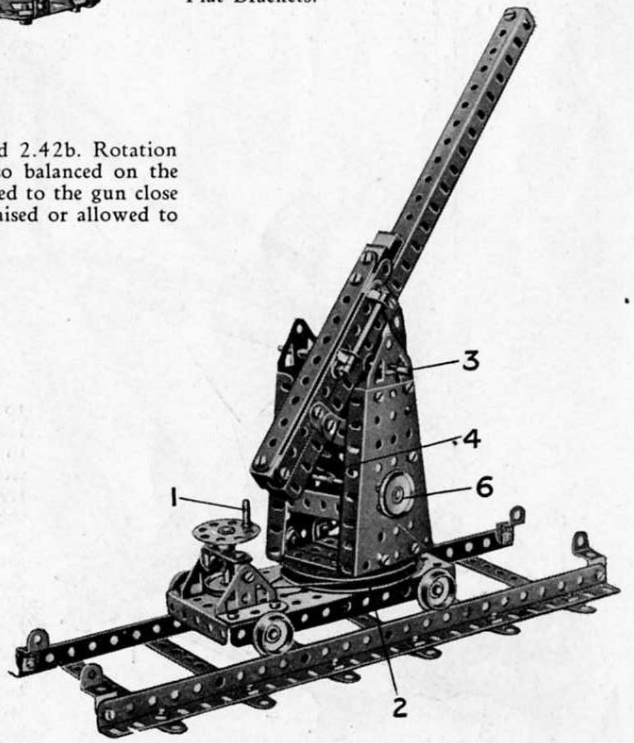


Fig. 2.42b

Parts required:

9	of No.	2	1	" "	19B
1	" "	6A	4	" "	20
4	" "	8	4	" "	22
4	" "	10	1	" "	24
3	" "	11	8	of No.	35
5	" "	12	57	" "	37
4	" "	16	6	" "	38
2	" "	17	1	" "	45
4	" "	48A			
1	" "	52			
2	" "	54			
4	" "	90A			
1	" "	115			
2	" "	126			
2	" "	126A			



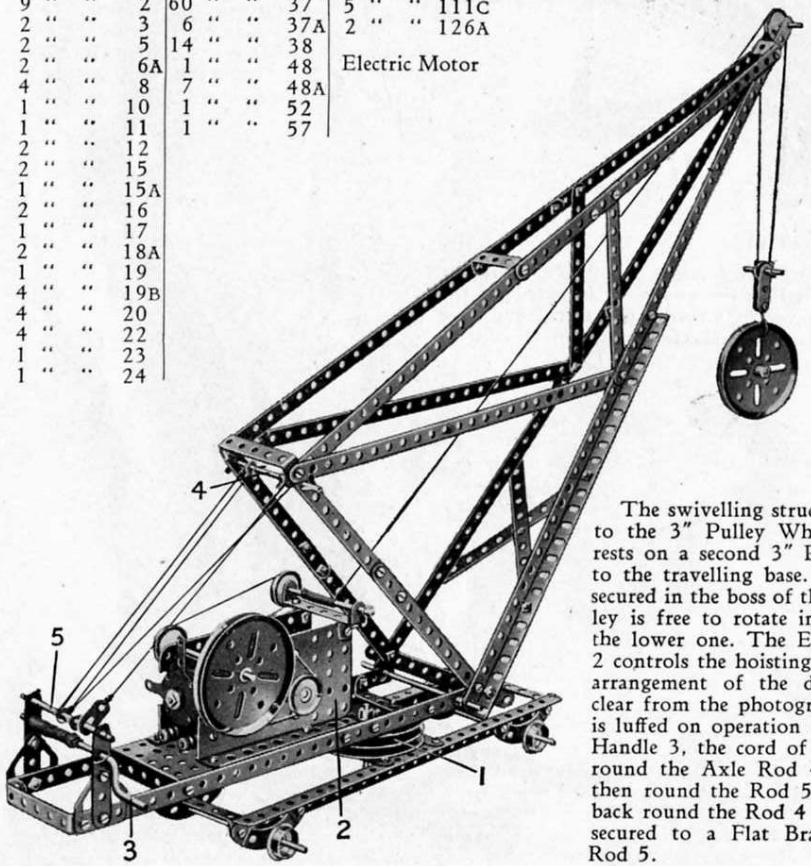
Model No. 2.43

Travelling Jib Crane

(Electrically Operated)

Parts required:

10 of No.	1	14 of No.	35	4 of No.	90A
9 " "	2	60 " "	37	5 " "	111C
2 " "	3	6 " "	37A	2 " "	126A
2 " "	5	14 " "	38		
2 " "	6A	1 " "	48	Electric Motor	
4 " "	8	7 " "	48A		
1 " "	10	1 " "	52		
1 " "	11	1 " "	57		
2 " "	12				
2 " "	15				
1 " "	15A				
2 " "	16				
1 " "	17				
2 " "	18A				
1 " "	19				
4 " "	19B				
4 " "	20				
4 " "	22				
1 " "	23				
1 " "	24				



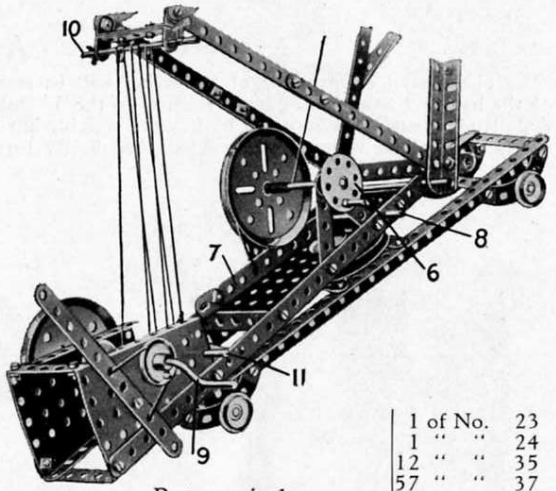
The swivelling structure is bolted to the 3" Pulley Wheel 1, which rests on a second 3" Pulley secured to the travelling base. A short rod secured in the boss of the upper Pulley is free to rotate in the boss of the lower one. The Electric Motor 2 controls the hoisting gear and the arrangement of the drive will be clear from the photograph. The jib is luffed on operation of the Crank Handle 3, the cord of which passes round the Axle Rod 4 in the jib, then round the Rod 5 in the base, back round the Rod 4 and is finally secured to a Flat Bracket on the Rod 5.

Model No. 2.44

Travelling Jib Crane

(Hand Operated)

Model No. 2.44 is similar to Model No. 2.43 except that it is fitted for hand operation, thus dispensing with the necessity of the Electric Motor. In this case the hoisting cord is operated by the hand wheel 6, the Rod of which is controlled by a band brake 7. The end hole of the lever of the latter is pivotally mounted on the Rod 8. The luffing movement of the jib is effected by the Crank Handle 9. The operating cord passes round the Rod 10 attached to the jib, then round Rod 11 in the base of the model, again round Rod 10, back round Rod 11, and once more round Rod 10. The end of the cord is then tied to a Flat Bracket on the Rod 11.



Parts required:

10 of No.	1	1 of No.	15	1 of No.	23
11 " "	2	1 " "	15A	1 " "	24
2 " "	3	5 " "	16	12 " "	35
6 " "	5	2 " "	18A	57 " "	37
2 " "	6A	1 " "	19	1 " "	48
4 " "	8	4 " "	19B	7 " "	48A
3 " "	10	4 " "	20	1 " "	52
1 " "	11	4 " "	22	2 " "	54
				1 " "	57
				1 " "	62
				4 " "	90A
				1 " "	111C
				1 " "	115

Model No. 2.45

Try-Your-Strength Machine

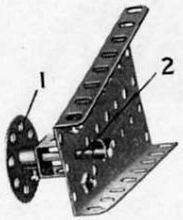


Fig. 2.45a

Parts required:

6 of No.	1	60 of No.	37
6 " "	2	6 " "	37A
1 " "	3	4 " "	38
2 " "	5	1 " "	45
2 " "	6A	1 " "	48
4 " "	8	1 " "	48A
2 " "	10	1 " "	52
10 " "	12	2 " "	54
2 " "	18A	3 " "	90A
1 " "	23	2 " "	100
1 " "	24	2 " "	126
3 " "	35		

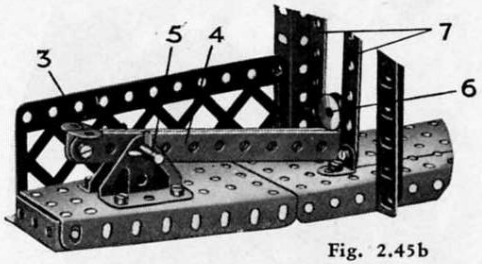
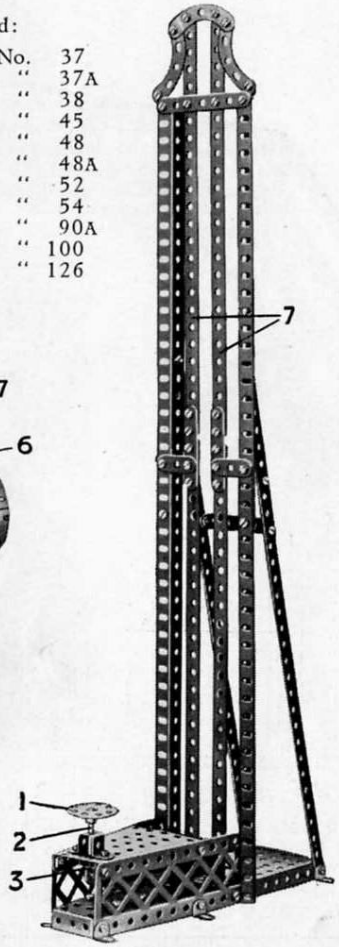


Fig. 2.45b



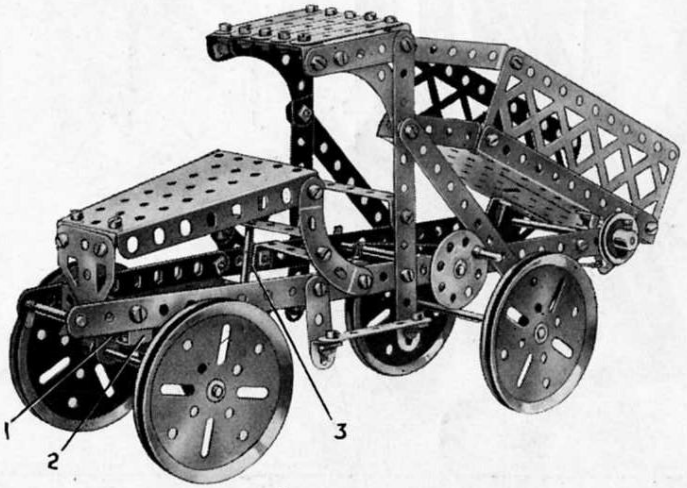
The Bush Wheel 1 is secured to a short Axle Rod 2, the lower end of which rests on a pair of Angle Brackets 3 bolted to the ends of four 5½" Strips 4. The Strips 4 are pivoted as shown (Fig. 2.45B) on a 1½" Rod 5, and on their opposite ends rests a ½" loose Pulley Wheel 6. When the Bush Wheel 1 is struck, the 5½" Strips fling the Pulley Wheel 6 upward, but the wheel is guided by the vertical 12½" Strips 7. The weight of the Strips 4 then causes the Bush Wheel to resume its original position.

Model No. 2.46

Tipping Wagon

Parts required:

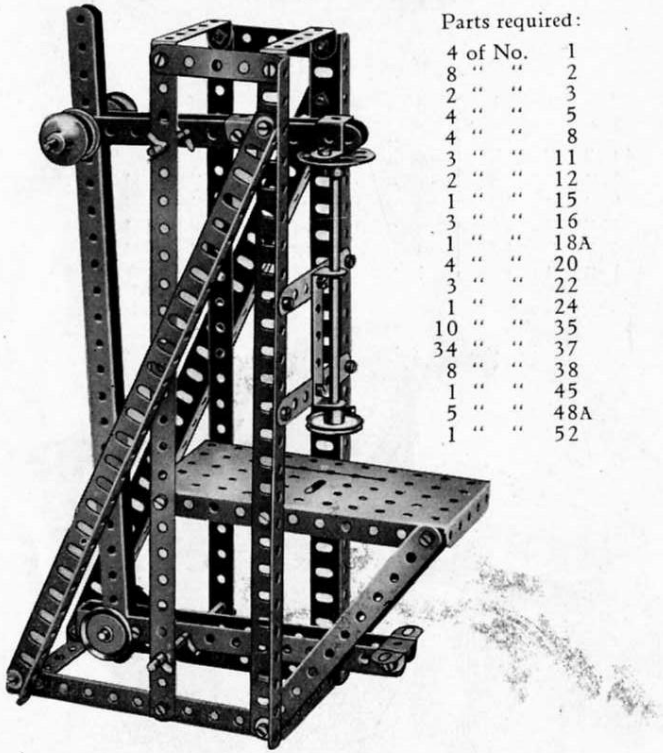
2 of No.	1	4 of No.	19B	1 of No.	52
4 " "	2	4 " "	22	2 " "	54
11 " "	5	1 " "	24	4 " "	90A
2 " "	6A	6 " "	35	2 " "	100
6 " "	12	59 " "	37	3 " "	111C
4 " "	16	4 " "	37A	1 " "	115
1 " "	17	1 " "	45	2 " "	126
1 " "	18A	1 " "	48	1 " "	126A
		7 " "	48A		



The front axle is journalled in a 2½"x½" Double Angle Strip 1 which in turn is bolted to a Double Bent Strip 2. The Double Bent Strip is pivoted to the Sector Plate by a bolt and two nuts. Cord passing over a 1" Pulley Wheel attached to the Rod 3 is fastened to the ends of the Double Angle Strip 1, and by rotating another Pulley, which represents the steering wheel, the road wheels are deflected.

Model No. 2.47

Embossing Machine

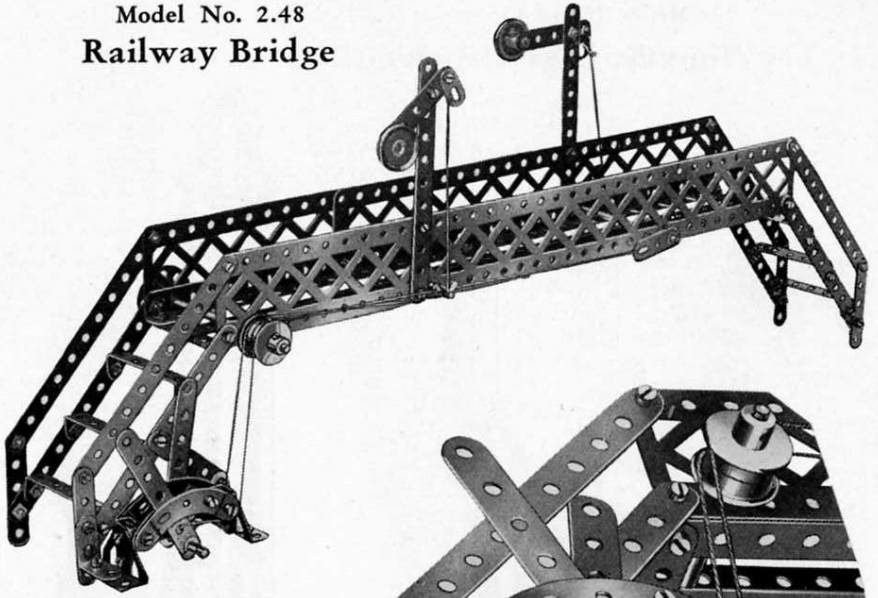


Parts required:

4	of No.	1
8	" "	2
2	" "	3
4	" "	5
4	" "	8
3	" "	11
2	" "	12
1	" "	15
3	" "	16
1	" "	18A
4	" "	20
3	" "	22
1	" "	24
10	" "	35
34	" "	37
8	" "	38
1	" "	45
5	" "	48A
1	" "	52

Model No. 2.48

Railway Bridge



Parts required:

2	of No.	1	1	of No.	24
10	" "	2	3	" "	35
2	" "	3	60	" "	37
8	" "	5	3	" "	37A
4	" "	8	6	" "	38
2	" "	10	7	" "	48A
3	" "	11	2	" "	62
2	" "	12A	4	" "	90
1	" "	15A	2	" "	99
1	" "	16	2	" "	100
1	" "	18A	3	" "	111C
2	" "	20	1	" "	115
2	" "	22	2	" "	126

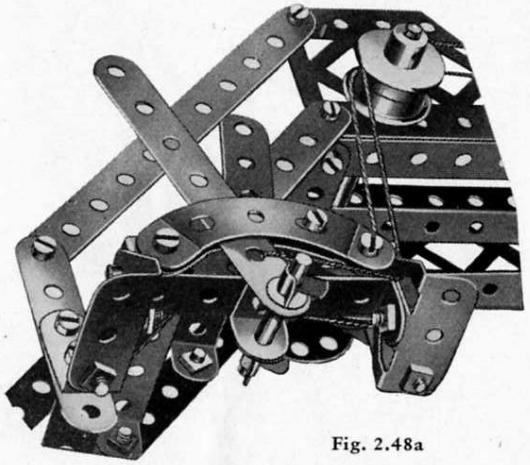


Fig. 2.48a

HOW TO CONTINUE

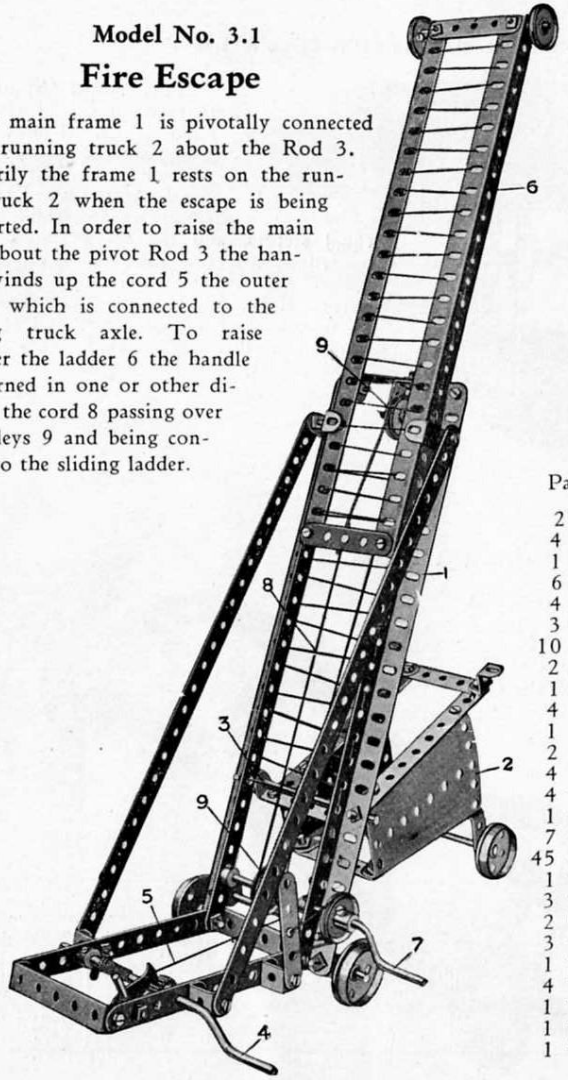
Do not consider that you have exhausted the possibilities of your No. 2X Meccano Outfit when you have made the 723 models here illustrated. With the experience you have gained you can now become an inventor and design entirely new models to your own ideas. If you strike trouble we will gladly place all our knowledge and experience at your disposal. Write to "Engineer Dept.," Meccano Co., Inc., Elizabeth, N. J.

You will probably wish to make bigger and more elaborate models and you can do this either by purchasing a No. 2A Meccano Accessory Outfit or some extra Meccano separate parts. You will find all the prices at the end of this book.

Model No. 3.1

Fire Escape

The main frame 1 is pivotally connected to the running truck 2 about the Rod 3. Ordinarily the frame 1 rests on the running truck 2 when the escape is being transported. In order to raise the main frame about the pivot Rod 3 the handle 4 winds up the cord 5 the outer end of which is connected to the running truck axle. To raise or lower the ladder 6 the handle 7 is turned in one or other direction, the cord 8 passing over the pulleys 9 and being connected to the sliding ladder.



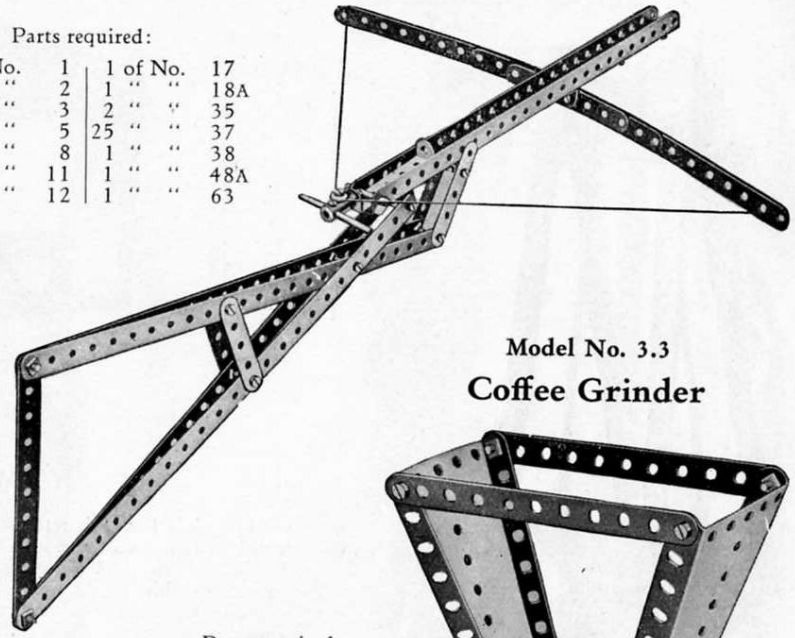
Parts required:

2	of No.	1
4	" "	2
1	" "	3
6	" "	5
4	" "	8
3	" "	11
10	" "	12
2	" "	12A
1	" "	15A
4	" "	16
1	" "	18A
2	" "	19
4	" "	20
4	" "	22
1	" "	22A
7	" "	35
45	" "	37
1	" "	44
3	" "	48A
2	" "	54
3	" "	59
1	" "	115
4	" "	125
1	" "	147A
1	" "	147B
1	" "	148

Model No. 3.2 **Crossbow**

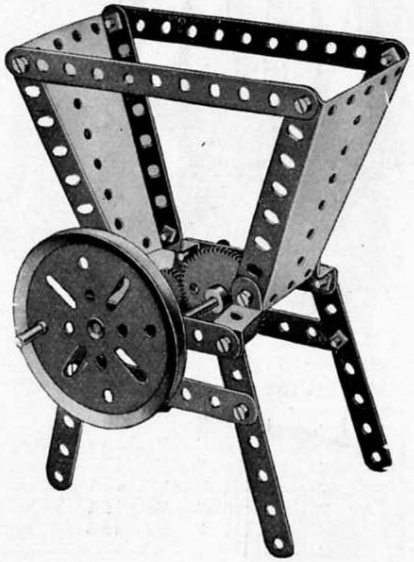
Parts required:

5	of No.	1	1	of No.	17
2	" "	2	1	" "	18A
1	" "	3	2	" "	35
4	" "	5	25	" "	37
2	" "	8	1	" "	38
2	" "	11	1	" "	48A
1	" "	12	1	" "	63



Model No. 3.3

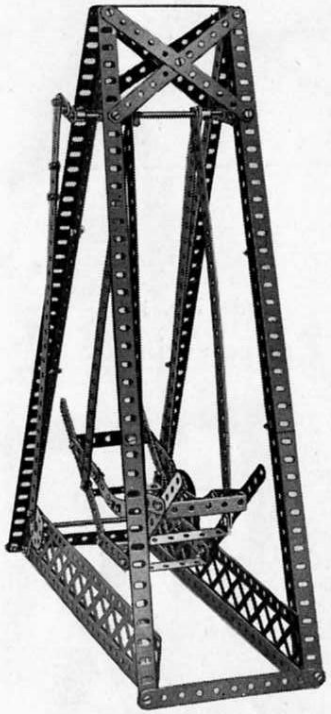
Coffee Grinder



Parts required:

2	of No.	2
6	" "	3
2	" "	4
2	" "	16
1	" "	19B
1	" "	26
1	" "	27A
16	" "	37
2	" "	54
3	" "	59
1	" "	115
4	" "	125

Model No. 3.4 Swing



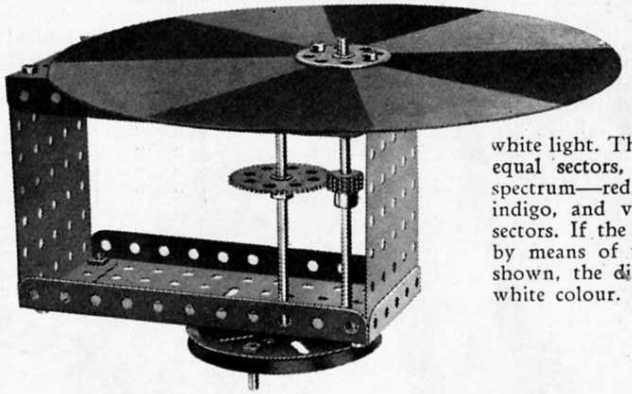
Parts required:

7 of No.	1	1 " "	24
10 " "	2	2 " "	35
8 " "	5	56 " "	37
8 " "	8	4 " "	37A
1 " "	10	6 " "	48A
2 " "	15	1 " "	48B
1 " "	19B		

Model No. 3.5 Newton's Disc

Parts required:

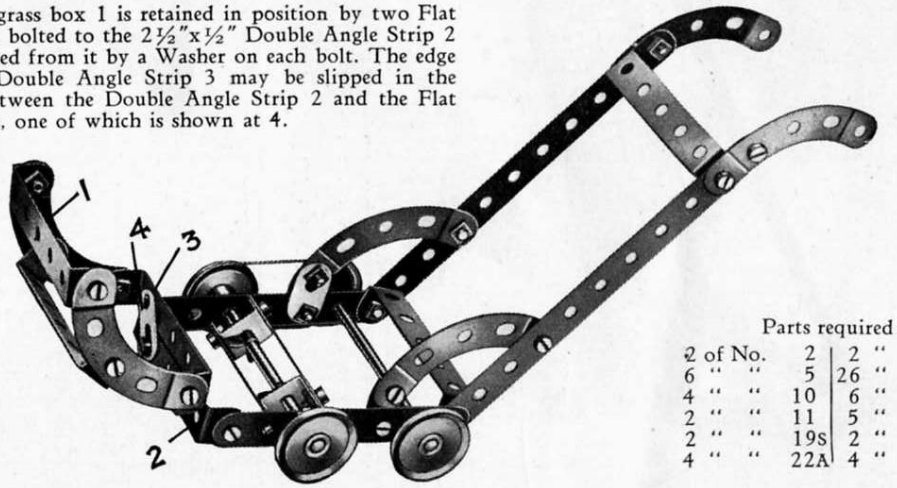
2 of No.	15
1 " "	19B
1 " "	24
1 " "	26
1 " "	27A
10 " "	37
1 " "	38
2 " "	52
2 " "	53
2 " "	59
1 " "	115



This model demonstrates that the colors of the spectrum, which are most simply produced by directing a ray of white light through a prism, can be re-combined to form white light. The cardboard disc is divided into equal sectors, and the seven colors of the spectrum—red, orange, yellow, green, blue, indigo, and violet—are painted on separate sectors. If the disc is rotated at a high speed by means of the hand wheel and the gears shown, the disc appears to be of a greyish-white colour.

Model No. 3.6 Lawn Mower

The grass box 1 is retained in position by two Flat Brackets bolted to the 2½"x½" Double Angle Strip 2 but spaced from it by a Washer on each bolt. The edge of the Double Angle Strip 3 may be slipped in the space between the Double Angle Strip 2 and the Flat Brackets, one of which is shown at 4.



Parts required:

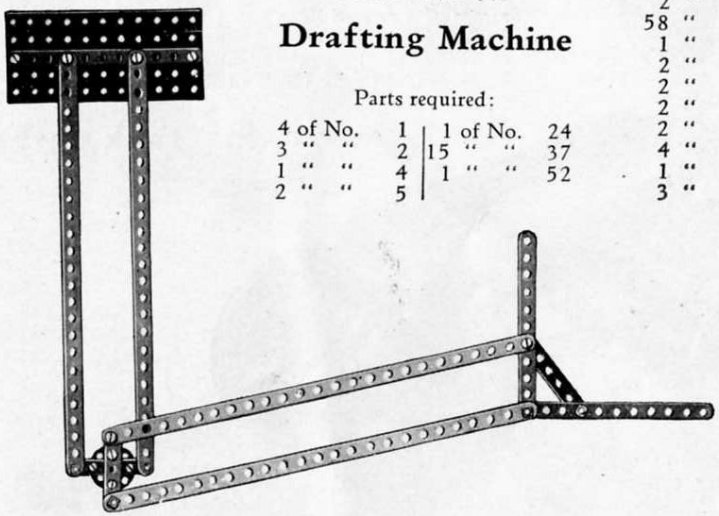
2 of No.	2	2 " "	35
6 " "	5	26 " "	37
4 " "	10	6 " "	38
2 " "	11	5 " "	48A
2 " "	19S	2 " "	90
4 " "	22A	4 " "	90A

Model No. 3.7 Horse Sleigh

Parts required:

3 of No.	2	13 of No.	37	1 of No.	57
4 " "	5	1 " "	48A	2 " "	90
1 " "	23	1 " "	52	1 " "	126A

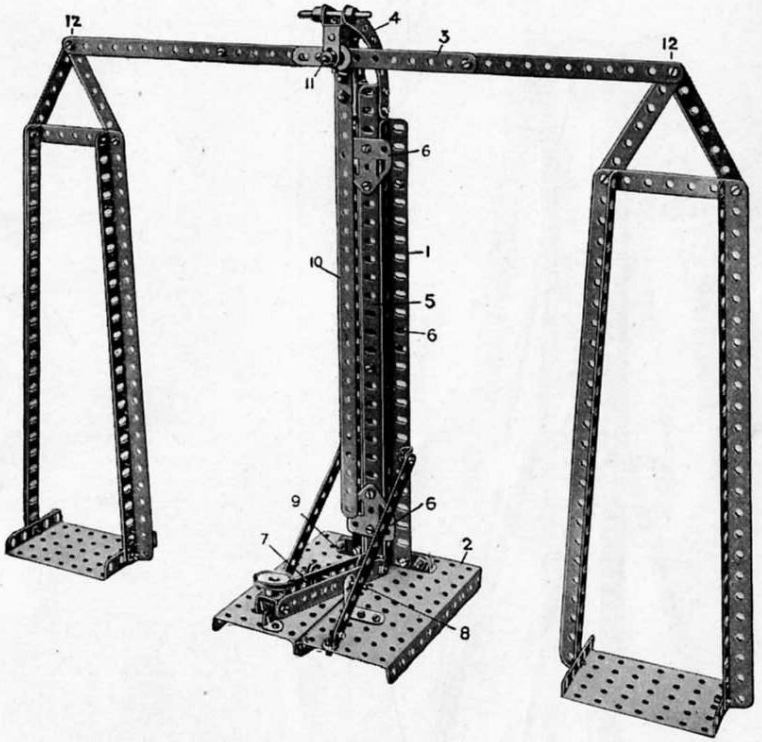
Model No. 3.8 Drafting Machine



Parts required:

4 of No.	1	1 of No.	24
3 " "	2	15 " "	37
1 " "	4	1 " "	52
2 " "	5		

Model No. 3.9 Demonstration Scales

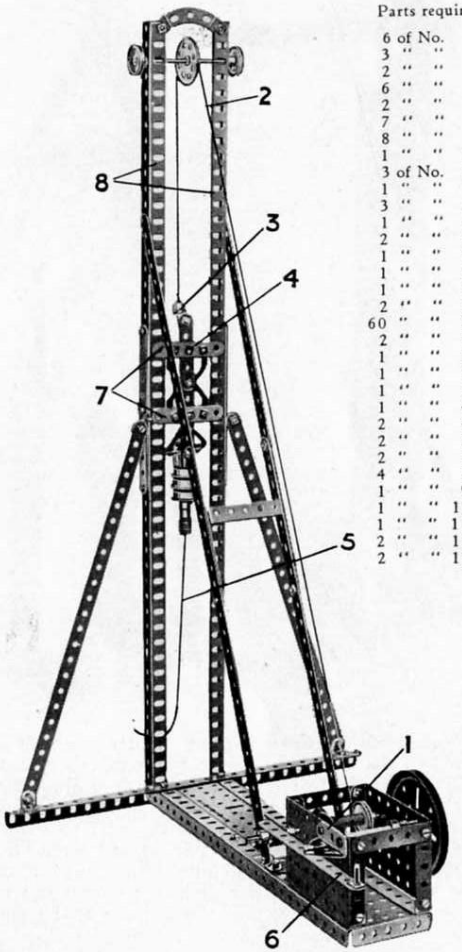


Parts required:

3 of No.	1
4 " "	2
6 " "	3
1 " "	4
2 " "	5
8 " "	8
4 " "	11
6 " "	12
2 " "	12A
2 " "	17
1 " "	18A
1 " "	22
2 " "	35
58 " "	37
1 " "	44
2 " "	52
2 " "	53
2 " "	59
2 " "	62
4 " "	90
1 " "	125
3 " "	126A

The only feature of this model which needs description is the standard, which is built up of two Angle Girders 1 bolted to the base 2 by Angle Brackets and spaced apart at the top by a 2½" Strip obliquely disposed. The balance lever 3 is pivotally carried in Curved Strips 4 bolted to the top of two Angle Girders 5 sliding between the Girders 1. The Girders 5 are themselves bolted together and in order to guide them as they slide vertically Flat Trunnions 6 are bolted at the front and rear. The balance is raised by depressing the lever 8 pivoted at 9 and pivotally connected at 11 to the vertically sliding Girders 5. The indicator 10 is bolted to a Crank at the rear, the boss of which is fitted on the pivot Rod 11. The connections at 12 are lock-nutted to allow free action.

Model No. 3.10
Pile Driver

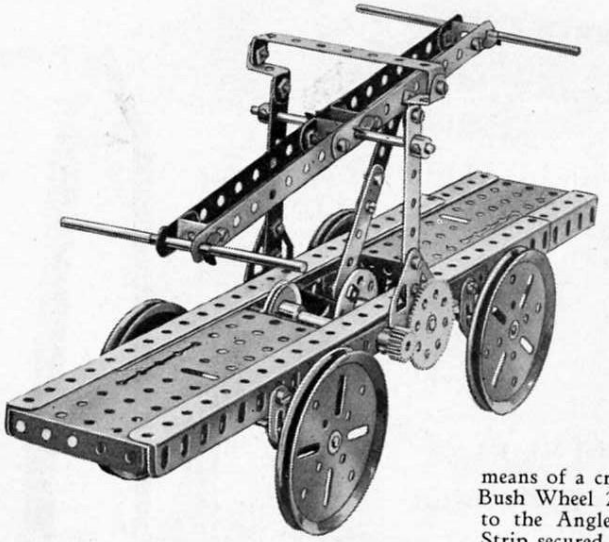


Parts required:

6	of No.	1
3	" "	2
2	" "	3
6	" "	5
2	" "	6A
7	" "	8
8	" "	12
1	" "	15A
3	of No.	16
1	" "	19B
3	" "	20
1	" "	21
2	" "	22
1	" "	26
1	" "	27A
1	" "	32
2	" "	35
60	" "	37
2	" "	37A
1	" "	38
1	" "	45
1	" "	46
1	" "	48A
2	" "	48B
2	" "	52
2	" "	53
4	" "	59
1	" "	90A
1	" "	111C
1	" "	115
2	" "	126
2	" "	126A

On moving the hand lever 6 to the right a ½" Pinion on the hoisting shaft is brought into engagement with the 57-teeth Gear Wheel 1 on the driving shaft and the ram 4 is raised. The hoisting cord 2 is tied to an Angle Bracket 3, which lodges under another angle bracket bolted to the ram. The latter may be dropped whenever required by jerking the cord 5, thereby releasing the Brackets 3. The Strips 7 are duplicated, and the Girders 8 slide between their ends.

Model No. 3.11
Hand Trolley

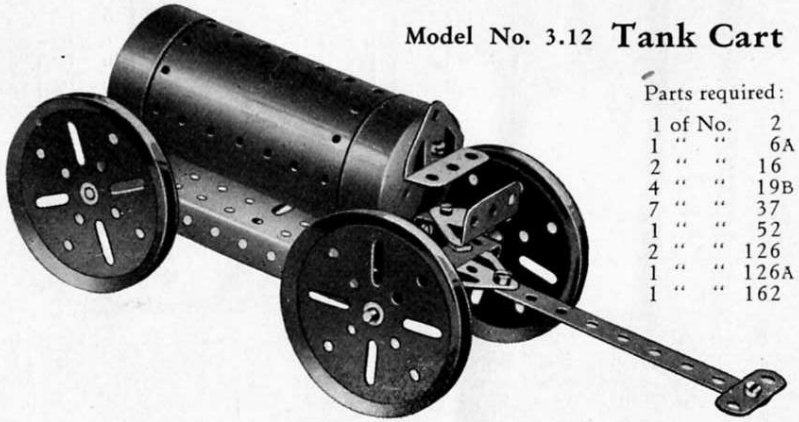


Parts required:

4	of No.	2	1	of No.	24
4	" "	3	1	" "	26
4	" "	5	1	" "	27A
2	" "	8	6	" "	35
8	" "	10	40	" "	37
4	" "	11	1	" "	45
2	" "	15A	1	" "	48B
4	" "	16	2	" "	52
1	" "	18A	3	" "	59
4	" "	19B	4	" "	90A
2	" "	22	2	" "	125
			2	" "	126A

The arm 1 is pivoted at its lower end to the Bush Wheel 2 and at its upper end to the hand lever 3, a bolt and two nuts being used to pivot the arm in each case. The drive is transmitted from the 1" Pulley Wheel 4 to a similar Pulley on the axle of the road wheels by means of a crossed belt. The 1½" Rod carrying the Bush Wheel 2 is journalled in the Strip 5 fastened to the Angle Girder, and also in a Double Bent Strip secured to the inside of the Girder.

Model No. 3.12
Tank Cart



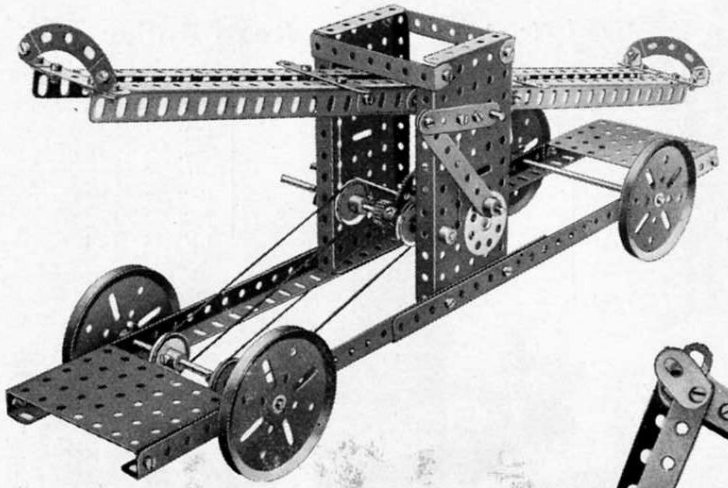
Parts required:

1	of No.	2
1	" "	6A
2	" "	16
4	" "	19B
7	" "	37
1	" "	52
2	" "	126
1	" "	126A
1	" "	162

Model No. 3.13 Actuated See-Saw

Parts required:

1 of No.	3	4 of No.	19B	43 of No.	37	2 of No.	62
6 " "	5	4 " "	22	2 " "	37A	2 " "	90A
8 " "	8	1 " "	24	2 " "	48A	1 " "	111C
4 " "	12	1 " "	26	2 " "	52	1 " "	115
2 " "	15	1 " "	27A	2 " "	53		
3 " "	15A	2 " "	35	3 " "	59		

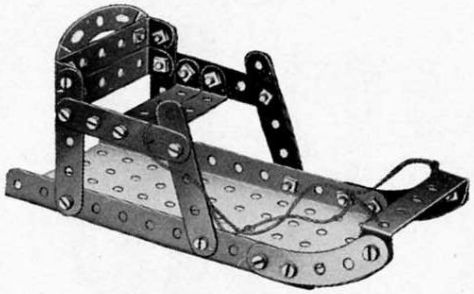


The model is actuated by the motion of one pair of travelling wheels. The axle to which these wheels are secured carries two 1" fast Pulley Wheels, which are connected by endless cords to similar Pulleys on the same Rod as a ½" Pinion Wheel. This ½" Pinion meshes with a 57-teeth Gear Wheel secured to the Rod of a Bush Wheel, and the latter is connected by means of a 5½" Strip to an extended Crank (a 2½" Strip and a Crank bolted together) secured to the pivotal Rod of the see-saw.

Model No. 3.14 Toboggan

Parts required:

6 of No.	5
20 " "	37
5 " "	48A
1 " "	52
2 " "	90
1 " "	90A



Model No. 3.15 The Meccangaroo

When placed upon an incline the "Meccangaroo" will "walk" with a quaint action. The positions of the various strips in relation to the body should be reproduced as accurately as possible, for the successful working of the model depends upon them.

The animal rocks about a short Rod secured between the rocker-frame which does duty as "legs." This frame consists of two 3½" Strips 3 bolted at their upper ends to Cranks in which the short Rod is secured, and at their lower ends to two 2½" large radius Curved Strips 4, which are connected together at their ends by 1½" Strips 5 and braced to the Strips 3 by 2½" Strips.

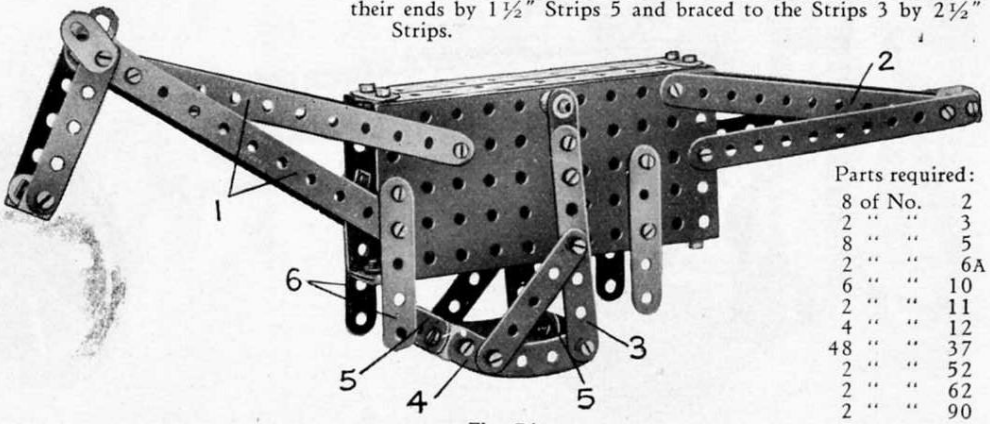
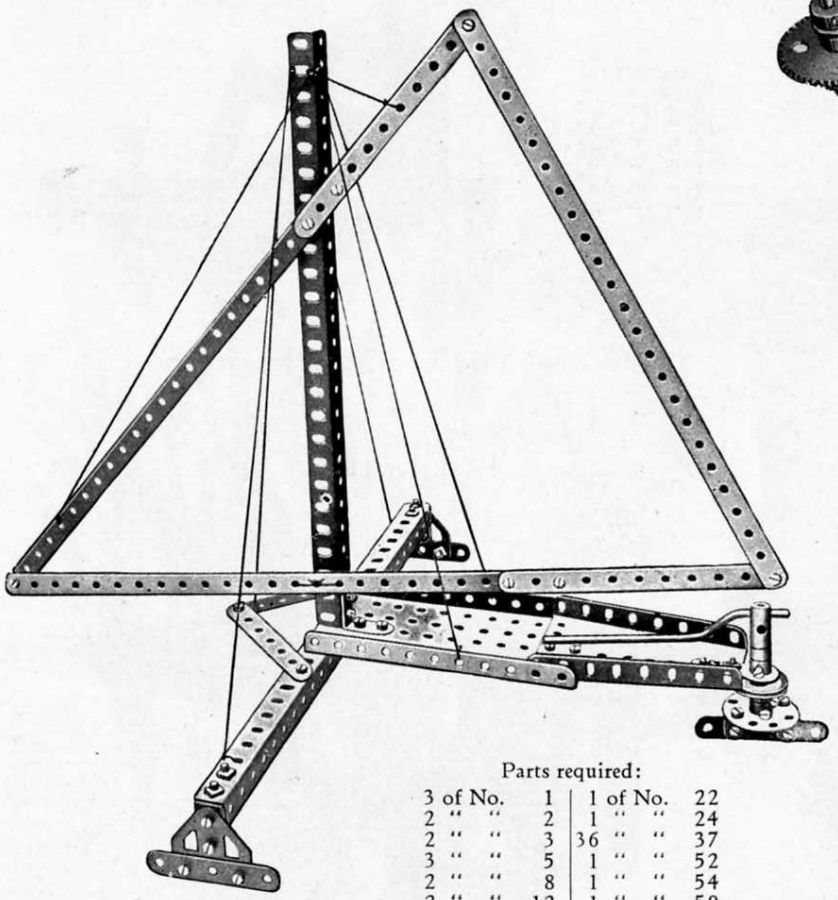


Fig. 74

Parts required:

8 of No.	2
2 " "	3
8 " "	5
2 " "	6A
6 " "	10
2 " "	11
4 " "	12
48 " "	37
2 " "	52
2 " "	62
2 " "	90

Model No. 3.16 Ice Yacht



Parts required:

3 of No.	1	1 of No.	22
2 " "	2	1 " "	24
2 " "	3	36 " "	37
3 " "	5	1 " "	52
2 " "	8	1 " "	54
2 " "	12	1 " "	59
3 " "	12A	1 " "	62
1 " "	17	1 " "	63
1 " "	19	2 " "	126A

Model No. 3.17 Pastry Designer

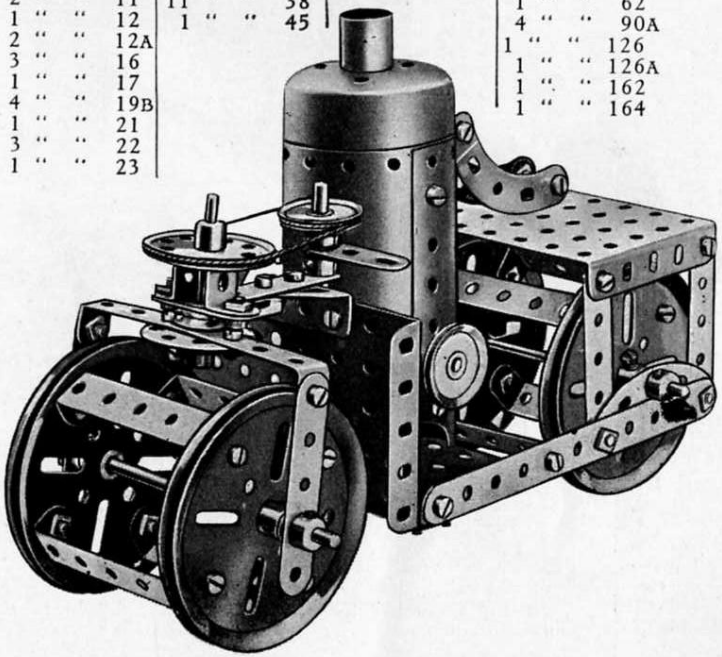
Parts required:

2 of No.	2	3 of No.	11	1 of No.	22A
3 " "	5	1 " "	17	1 " "	27A
9 of No.	37				
2 " "	59				

Model No. 3.18 Steam Road Roller

Parts required:

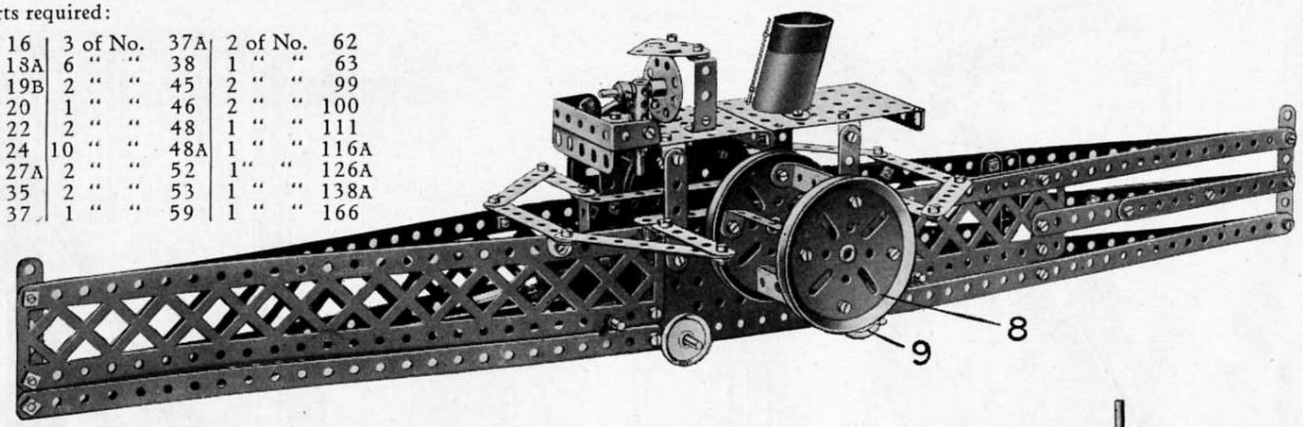
2 of No.	2	1 of No.	24	8 of No.	48A	3 of No.	53
7 " "	5	57 " "	37	1 " "	48B	4 " "	59
2 " "	11	11 " "	38			1 " "	62
1 " "	12	1 " "	45			4 " "	90A
2 " "	12A					1 " "	126
3 " "	16					1 " "	126A
1 " "	17					1 " "	162
4 " "	19B					1 " "	164
1 " "	21						
3 " "	22						
1 " "	23						



Model No. 3.19 Paddle Steamer

Parts required:

6	of No.	1	4	"	"	16	3	of No.	37A	2	of No. 62
4	" "	2	2	"	"	18A	6	" "	38	1	" " 63
6	" "	3	4	"	"	19B	2	" "	45	2	" " 99
2	" "	4	4	"	"	20	1	" "	46	2	" " 100
10	" "	5	4	"	"	22	2	" "	48	1	" " 111
2	" "	6A	1	"	"	24	10	" "	48A	1	" " 116A
14	" "	12	1	"	"	27A	2	" "	52	1	" " 126A
2	" "	15	4	"	"	35	2	" "	53	1	" " 138A
2	" "	15A	94	"	"	37	1	" "	59	1	" " 166



The paddle-wheels are secured to a crankshaft (see Fig. 319A) consisting of two 3½" Axle Rods 1, two Cranks 2, and a ¾" Bolt 3 secured to the central holes of the Cranks. The two oscillating cylinders 4 are built up from two ¾" Flanged Wheels and a pair of Sleeve Pieces, the latter being bolted to the 2½"x½" Double Angle Strips 5, which are free to turn on Rods 6. The ends of the 5" Piston Rods are secured in the bosses of two small Fork Pieces 7, which pivot about the ¾" Bolt 3 of the crankshaft. As the model runs along the ground, the 3" Pulley Wheels 8 secured to the rods 1 are rotated by endless cords from the 1" fast Pulley Wheels 9, while the cylinders 4 oscillate and appear to be actually operating the paddle-wheels.

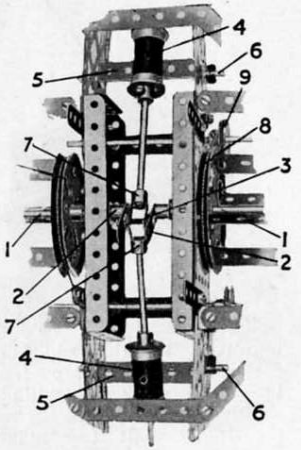
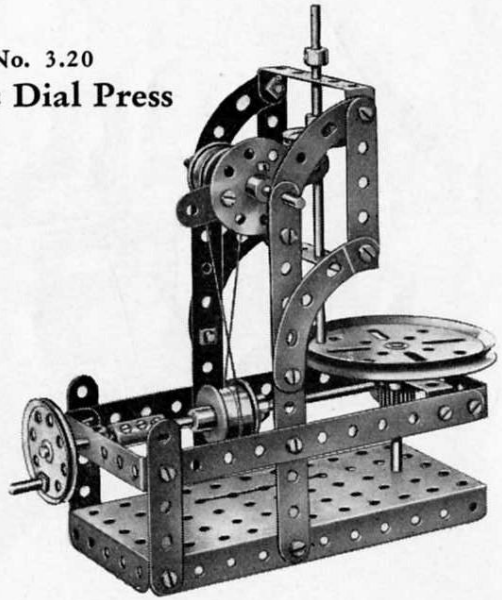


Fig. 3.19a

Model No. 3.20
Automatic Dial Press

Parts required:

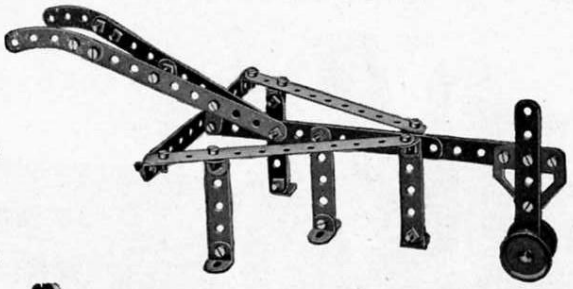
4	of No.		2
5	"	"	5
2	"	"	15
1	"	"	16
1	"	"	17
1	"	"	18A
1	"	"	19B
4	"	"	20
1	"	"	21
1	"	"	22
1	"	"	24
1	"	"	26
1	"	"	27A
1	"	"	32
22	"	"	37
5	"	"	48A
1	"	"	52
3	"	"	59
1	"	"	63
4	"	"	90A
1	"	"	115



Model No. 3.21 Cultivator

Parts required:

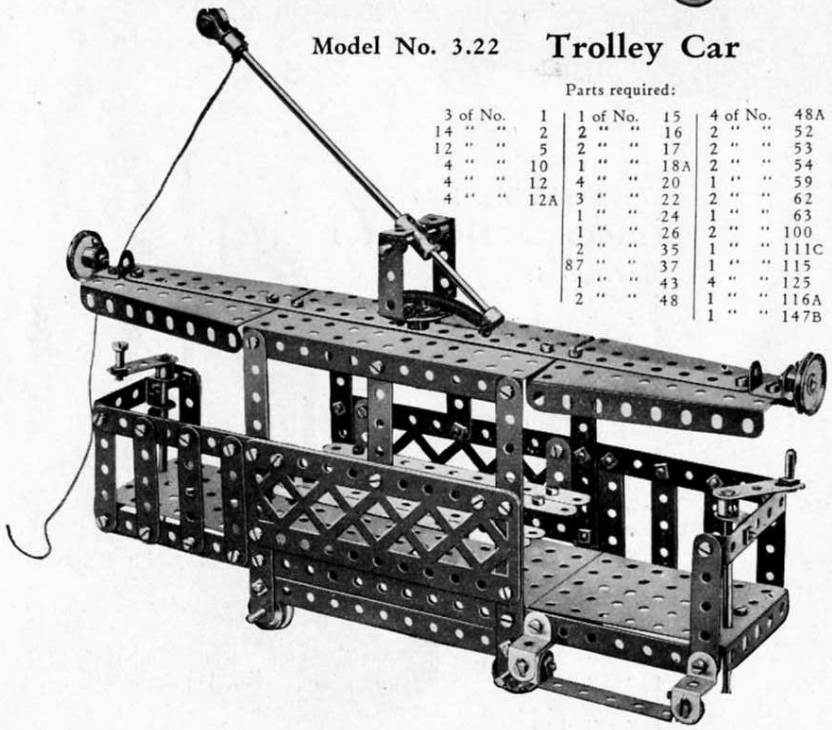
7	of No.	2
1	" "	3
4	" "	5
1	" "	10
14	" "	12
1	" "	18A
2	" "	22
31	" "	37
2	" "	38
2	" "	90
1	" "	126A



Model No. 3.22 Trolley Car

Parts required:

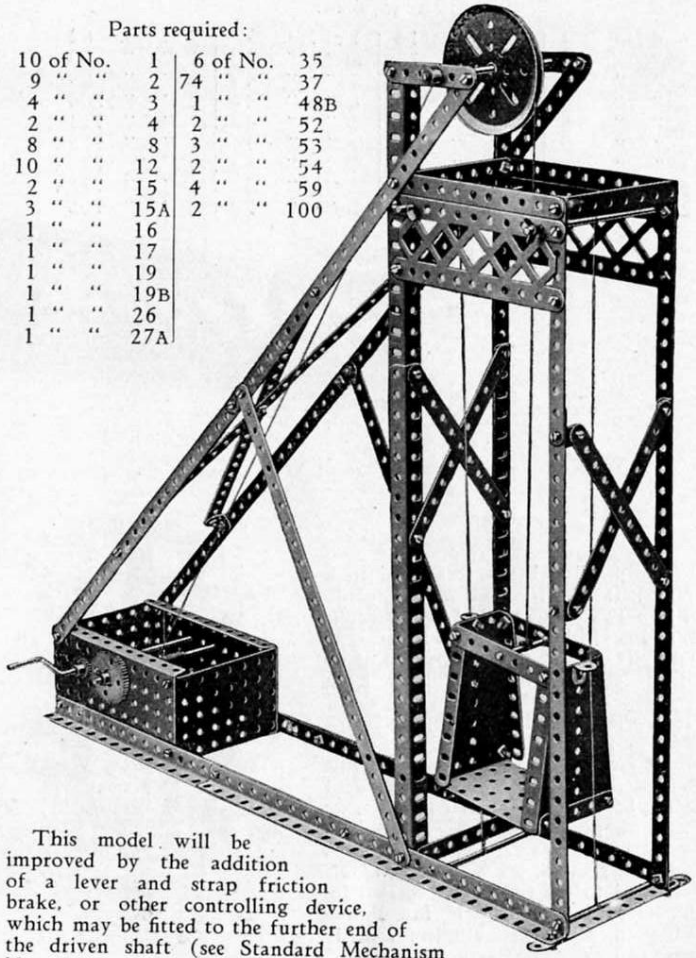
3	of No.	1	1	of No.	15	4	of No.	48A
14	" "	2	2	" "	16	2	" "	52
12	" "	5	2	" "	17	2	" "	53
4	" "	10	1	" "	18A	2	" "	54
4	" "	12	4	" "	20	1	" "	59
4	" "	12A	3	" "	22	2	" "	62
			1	" "	24	1	" "	63
			1	" "	26	2	" "	100
			2	" "	35	1	" "	111C
			87	" "	37	1	" "	115
			1	" "	43	4	" "	125
			2	" "	48	1	" "	116A
						1	" "	147B



Model No. 3.23 Pit Head Gear

Parts required:

10	of No.	1	6	of No.	35
9	" "	2	74	" "	37
4	" "	3	1	" "	48B
2	" "	4	2	" "	52
8	" "	8	3	" "	53
10	" "	12	2	" "	54
2	" "	15	4	" "	59
3	" "	15A	2	" "	100
1	" "	16			
1	" "	17			
1	" "	19			
1	" "	19B			
1	" "	26			
1	" "	27A			



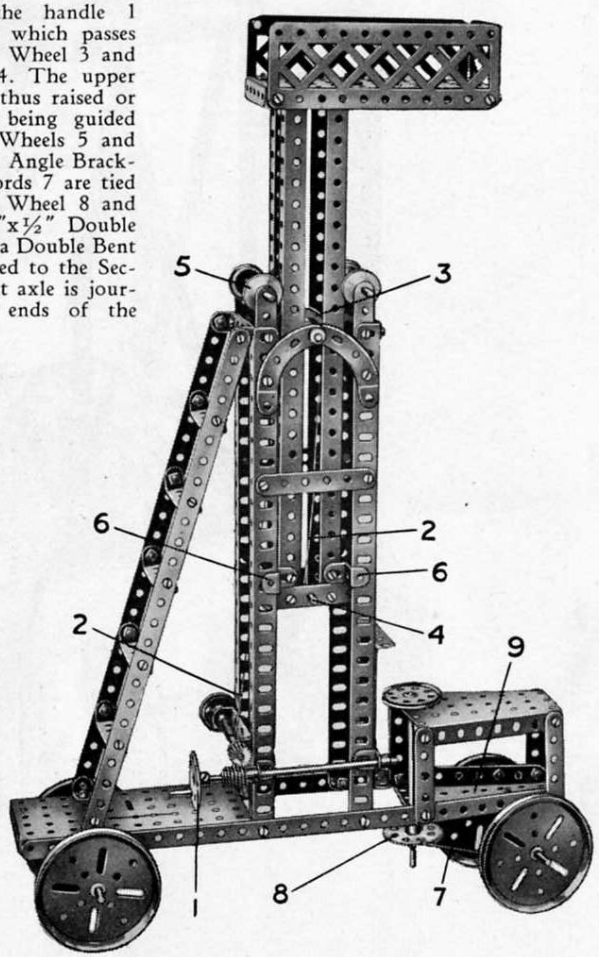
This model will be improved by the addition of a lever and strap friction brake, or other controlling device, which may be fitted to the further end of the driven shaft (see Standard Mechanism No. 81).

Model No. 3.24 Tower Wagon

When operated the handle 1 winds in the cord 2, which passes over a 1" fast Pulley Wheel 3 and is tied to the Rod 4. The upper part of the tower is thus raised or lowered as required, being guided by the ¾" Flanged Wheels 5 and two pairs of Reversed Angle Brackets 6. The steering cords 7 are tied to the 57-teeth Gear Wheel 8 and to the end of a 2½"x½" Double Angle Strip bolted to a Double Bent Strip, which is pivoted to the Sector Plate 9. The front axle is journalled through the ends of the Double Angle Strip.

Parts required:

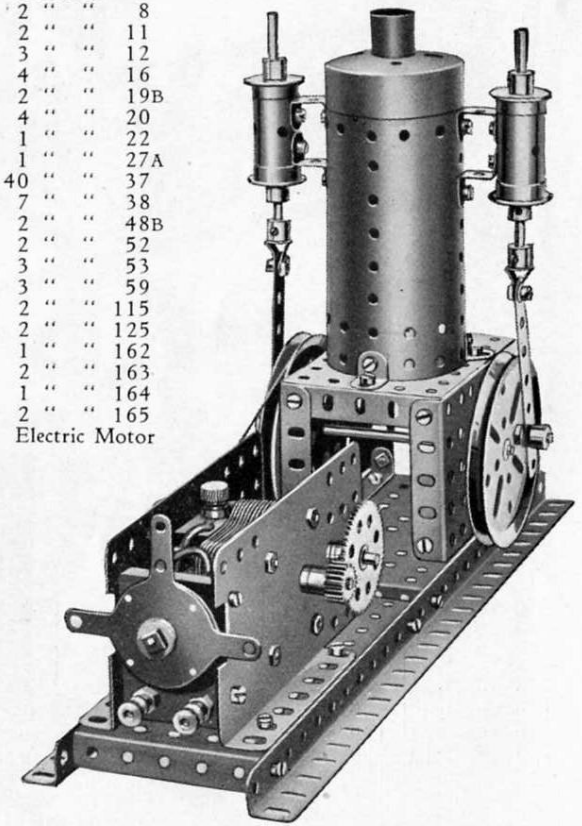
4	of No.	1
2	" "	4
6	" "	5
2	" "	6A
8	" "	8
8	" "	12
1	" "	15
3	" "	15A
4	" "	16
1	" "	17
4	" "	19B
4	" "	20
1	" "	21
2	" "	22
1	" "	24
1	" "	26
1	" "	27A
1	" "	32
3	" "	35
84	" "	37
2	" "	37A
1	" "	45
8	" "	48A
2	" "	52
1	" "	53
2	" "	54
3	" "	59
4	" "	90A
1	" "	98
2	" "	100
1	" "	111C
1	" "	115
4	" "	125



Model No. 3.25 Two-Cylinder Vertical Steam Engine

Parts required:

2	of No.	3
2	" "	8
2	" "	11
3	" "	12
4	" "	16
2	" "	19B
4	" "	20
1	" "	22
1	" "	27A
40	" "	37
7	" "	38
2	" "	48B
2	" "	52
3	" "	53
3	" "	59
2	" "	115
2	" "	125
1	" "	162
2	" "	163
1	" "	164
2	" "	165
Electric Motor		



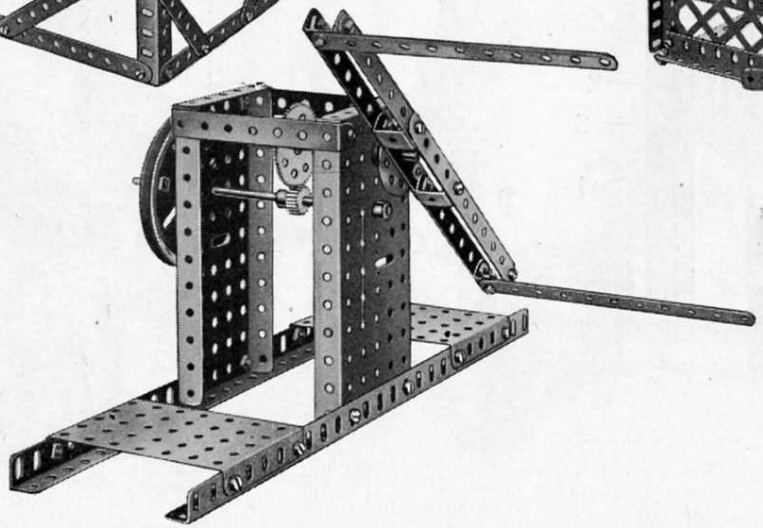
These Models can be made with MECCANO Outfit No. 3X, or No. 2X and No. 2A.

Model No. 3.26
Swinging Cot

Parts required:

2	of No.	1
18	" "	2
6	" "	3
2	" "	5
8	" "	8
3	" "	12
1	" "	15
1	" "	15A
3	" "	16
1	" "	22
10	" "	35
68	" "	37
6	" "	37A
8	" "	38
1	" "	45
3	" "	48A
1	" "	52
4	" "	59
2	" "	62
1	" "	63
1	" "	98
2	" "	99
2	" "	100
4	" "	111C

Model No. 3.27
Lace Jennier



Parts required:

6	of No.	2	28	of No.	37
2	" "	8	4	" "	38
4	" "	11	2	" "	48B
2	" "	15	2	" "	52
1	" "	19B	2	" "	53
1	" "	24	2	" "	59
1	" "	26	1	" "	115
1	" "	37A			

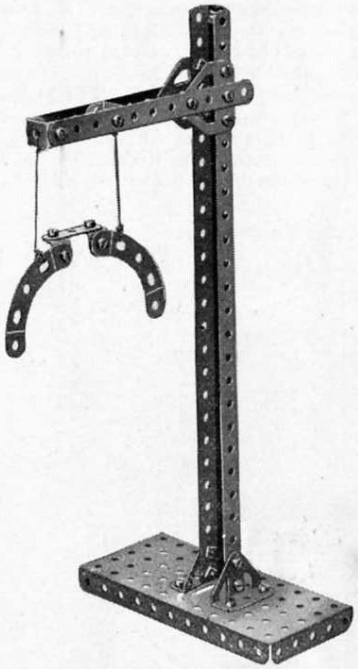
Model No. 3.28 Swing Boat

Parts required:

2	of No.	1	2	of No.	22A
17	" "	2	64	" "	37
4	" "	5	2	" "	37A
6	" "	8	2	" "	45
8	" "	12	4	" "	90A
2	" "	17	2	" "	99
2	" "	19B	2	" "	100
2	" "	22	2	" "	111C

Model No. 3.29

Railway Gauge



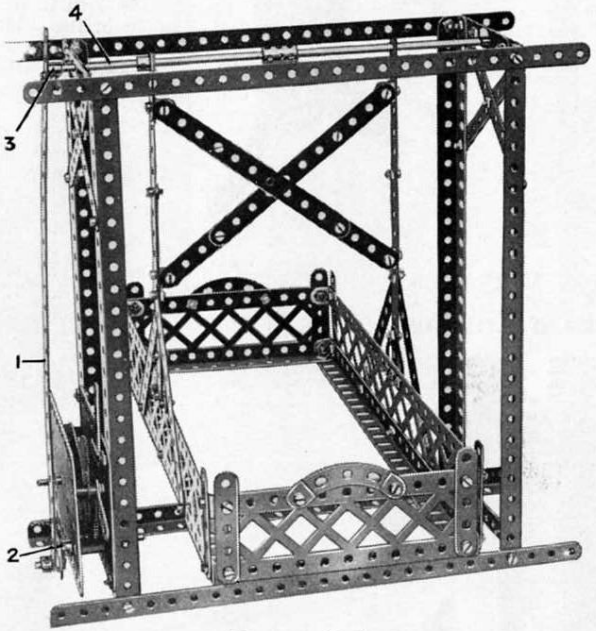
Parts required:

2	of No.	2
1	" "	6A
2	" "	8
2	" "	11
2	" "	12
25	" "	37
1	" "	53
2	" "	90A
2	" "	126
2	" "	126A

Model No. 3.30

Auto Swing Boat

The connecting Strip 1 is attached pivotally at one end to a Threaded Pin secured to the Bush Wheel 2 on the driving spindle of the Motor, and at the other end by means of bolt and lock-nuts to a Crank 3 mounted on the shaft 4, which operates the swing boat.

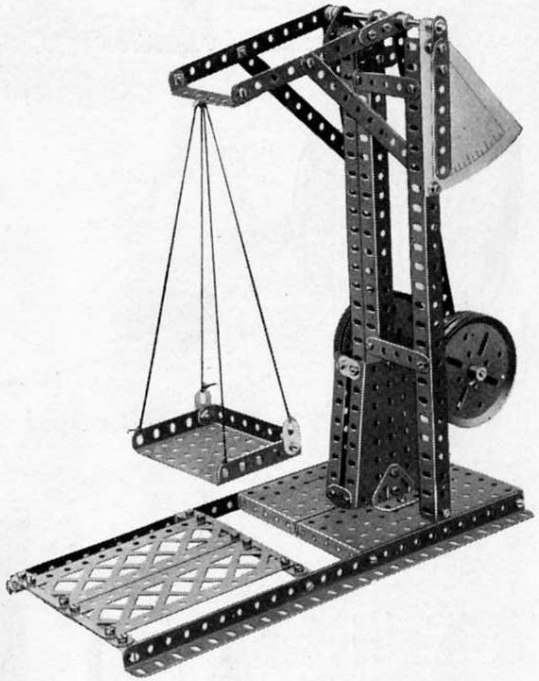


Parts required:

3	of No.	1	1	of No.	24	2	of No.	99
16	" "	2	2	" "	35	2	" "	100
6	" "	3	86	" "	37	1	" "	111C
8	" "	5	2	" "	37A	1	" "	115
8	" "	8	1	" "	59	2	" "	126A
1	" "	10	2	" "	62	Clockwork Motor (not included in outfit)		
12	" "	12	1	" "	63			
2	" "	15	2	" "	90A			

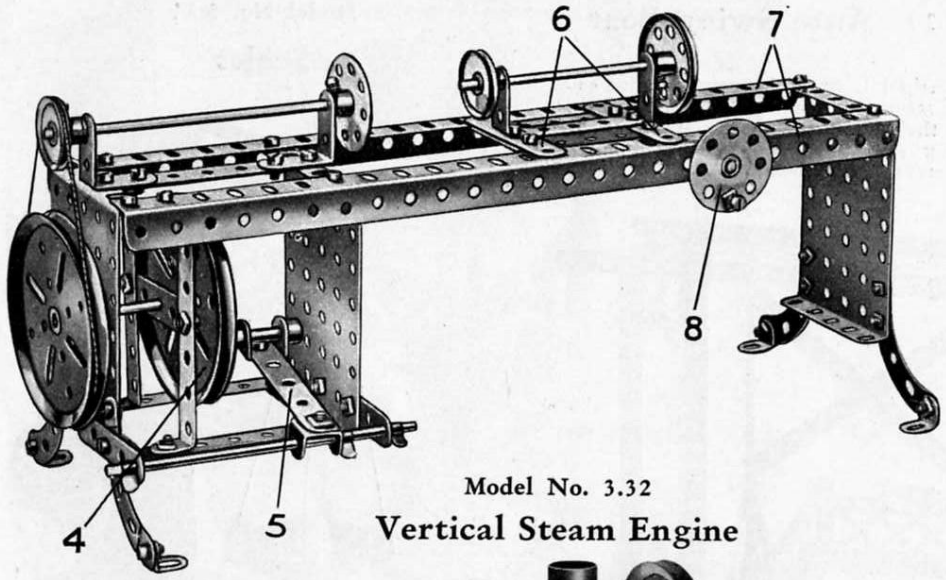
Model No. 3.31

Scales

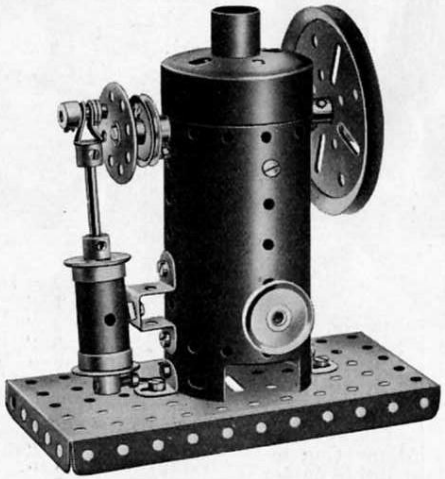


Parts required:

10	of No.	2	2	of No.	48A
1	" "	3	1	" "	48B
2	" "	5	2	" "	52
5	" "	8	1	" "	53
7	" "	10	2	" "	54
5	" "	12	4	" "	59
2	" "	15A	2	" "	62
4	" "	19B	2	" "	100
67	" "	37	2	" "	126
2	" "	38	2	" "	126A



Model No. 3.32
Vertical Steam Engine



Parts required:

2 of No.	12		1 of No.	45
1 " "	16		1 " "	52
1 " "	17		1 " "	59
1 " "	19B		1 " "	115
2 " "	20B		1 " "	162
3 " "	22		1 " "	163
1 " "	24		1 " "	164
9 " "	37		1 " "	166
2 " "	38			

Model No. 3.33 Lathe

The arrangement of the treadle is shown in detail in Fig. 3.33A. The Crank 1 is provided with a Flat Bracket, the round hole of which coincides with the elongated hole of the Crank, and receives the short Rod 2. The Crank 1 is free to turn about a Threaded Pin 3, secured to the 3" Pulley Wheel 4, and once the latter is set in motion it can be kept in rotation by working the treadle 5. The Strips 6 of the saddle (Fig. 3.33) are duplicated and their ends form slots to receive the Flanges of the Angle Girders 7. The hand wheel 8 is a dummy one, but if desired it may be arranged to operate the saddle by an endless rope device.

Parts required:

3 of No.	3		1 of No.	18A	1 of No. 46
10 " "	5		2 " "	19B	2 " " 48B
2 " "	8		1 " "	21	3 " " 53
2 " "	11		2 " "	22	4 " " 59
4 " "	12		1 " "	24	1 " " 62
2 " "	12A		3 " "	35	4 " " 90A
2 " "	15A		44 " "	37	1 " " 111C
2 " "	16		2 " "	37A	1 " " 115
1 " "	17		4 " "	38	

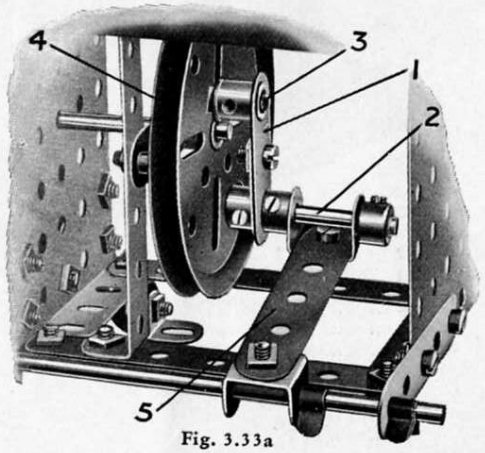
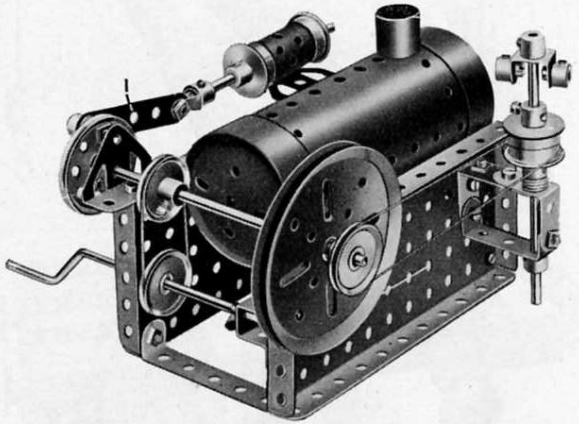


Fig. 3.33a

Model No. 3.34 Horizontal Engine

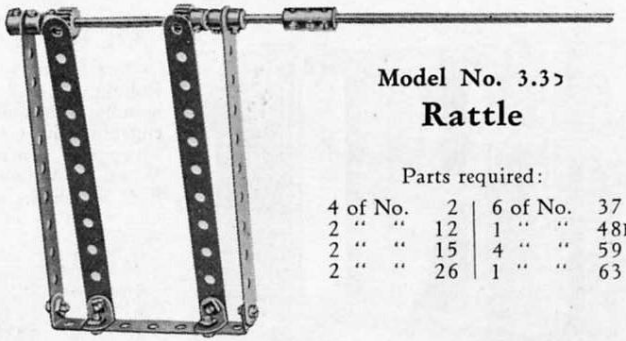
Parts required:

1	of No.	5	1	of No.	21	4	of No.	59
1	" "	6A	3	" "	22	1	" "	115
2	" "	12A	1	" "	35	1	" "	116
2	" "	15A	25	" "	37	2	" "	126
1	" "	16	7	" "	38	1	" "	126A
1	" "	18A	1	" "	45	1	" "	162
1	" "	19	1	" "	48	1	" "	163
1	" "	19B	4	" "	48A	1	" "	164
4	" "	20B	2	" "	52	1	" "	166



The 2½" Strip 1, forming the connecting rod, is attached to the 1½" Pulley Wheel by means of a Threaded Pin. The latter is fastened in one hole of the 1½" Pulley Wheel, and two Washers are placed upon it between the Strip 1 and the wheel. The connecting rod is held in place by a Collar locked to the end of the Threaded Pin.

The Boiler is attached to the framework by means of two 2½" x ½" Double Angle Strips attached by their centre holes to the side of the Boiler opposite the chimney. When the Boiler is placed in the position shown, the whole is secured by bolting the Double Angle Strips to the side Flanged Plates.



Model No. 3.35 Rattle

Parts required:

4	of No.	2	6	of No.	37
2	" "	12	1	" "	48B
2	" "	15	4	" "	59
2	" "	26	1	" "	63

Model No. 3.36 Oil Cake Chopper

Parts required:

4	of No.	3	1	of No.	52
6	" "	10	2	" "	53
1	" "	15	2	" "	54
1	" "	19B	1	" "	59
4	" "	22	2	" "	90A
24	" "	37	1	" "	115
2	" "	48B	2	" "	125

Fig. 3.36A shows the hand wheel and shaft removed from the model. It will be seen that the chopping mechanism is represented by Flat Brackets clamped between two pairs of 1" fixed Pulley Wheels.

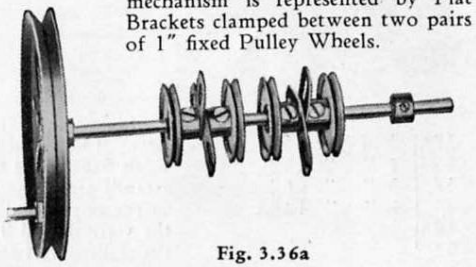
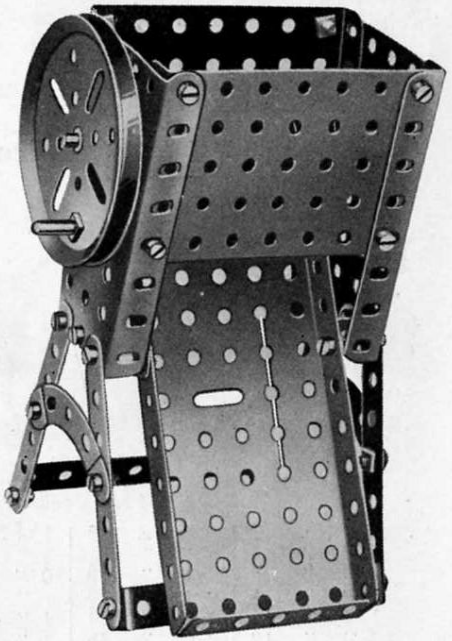


Fig. 3.36a



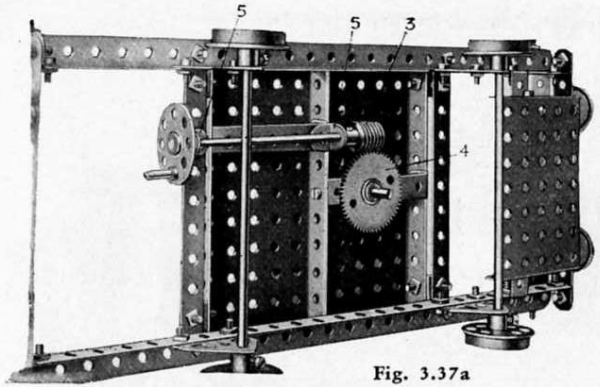


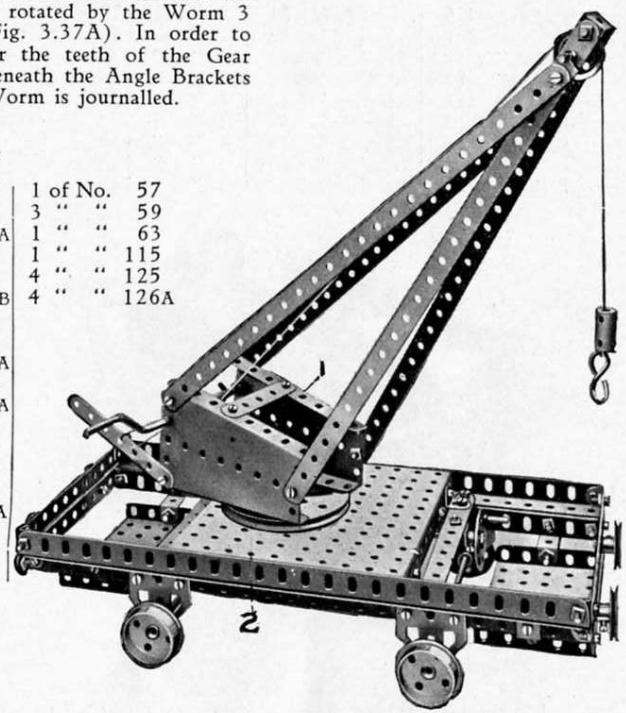
Fig. 3.37a

Model No. 3.37 Railway Wrecking Car

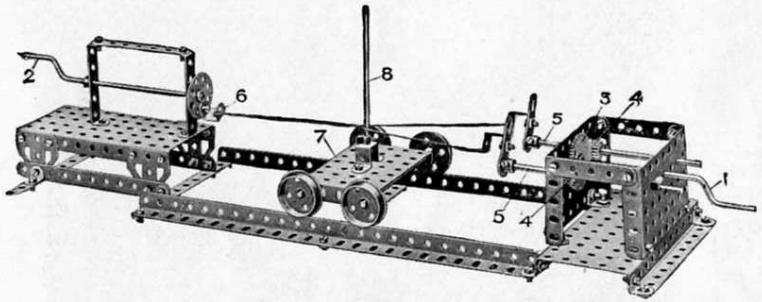
The flanges of the Sector Plates 1 are bolted to the 3" Pulley Wheel 2 upon which the crane swivels, and the spindle of the Pulley Wheel is rotated by the Worm 3 engaging the Gear Wheel 4 (Fig. 3.37A). In order to bring the Worm centrally over the teeth of the Gear Wheel 4, Washers are placed beneath the Angle Brackets 5 in which the spindle of the Worm is journalled.

Parts required:

4 of No.	1	14 of No.	12	1 of No.	57
6 " "	2	2 " "	15	3 " "	59
1 " "	3	1 " "	15A	1 " "	63
2 " "	5	2 " "	17	1 " "	115
4 " "	8	1 " "	19	4 " "	125
1 " "	11	1 " "	19B	4 " "	126A
		4 " "	20		
		4 " "	22		
		1 " "	22A		
		1 " "	24		
		1 " "	27A		
		1 " "	32		
		3 " "	35		
		70 " "	37		
		2 " "	38		
		2 " "	48A		
		2 " "	52		
		2 " "	53		
		2 " "	54		



Model No. 3.38 Wire Rope Maker



Parts required:

6 of No.	2	2 of No.	15	1 of No.	27A	3 of No.	53
1 " "	3	3 " "	15A	3 " "	35	4 " "	59
2 " "	5	2 " "	19	50 " "	37	2 " "	62
2 " "	8	4 " "	20	1 " "	45	4 " "	126A
3 " "	11	1 " "	24	2 " "	48A		
12 " "	12	2 " "	26	2 " "	52		

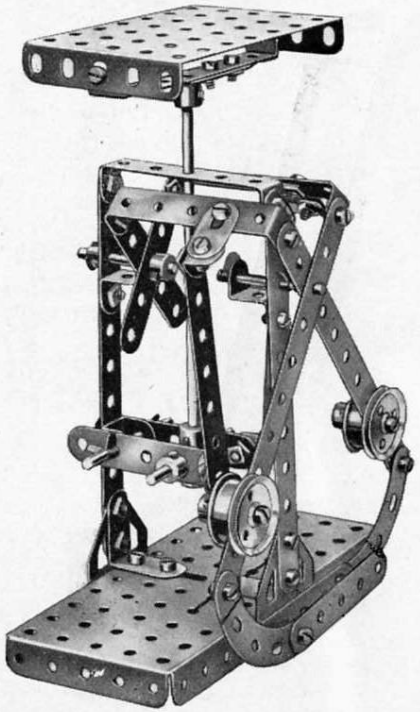
The strands are twisted from both ends by the handles 1 and 2 of the fixed parts. The Handle 1 rotates through a large Gear Wheel 3 two Pinions 4 on the Rods 5 carrying Cranks to which the strands are attached. The other ends of the strands are connected to a Double Bent Strip 6 on a Bush Wheel which is rotated in the opposite direction by a Crank Handle 2. The carriage 7 runs on rails and the vertical Rod 8 is kept just at the formation of the twisted rope and so controls the tightness of the twist.

Model No. 3.39

Letter Balance

Parts required:

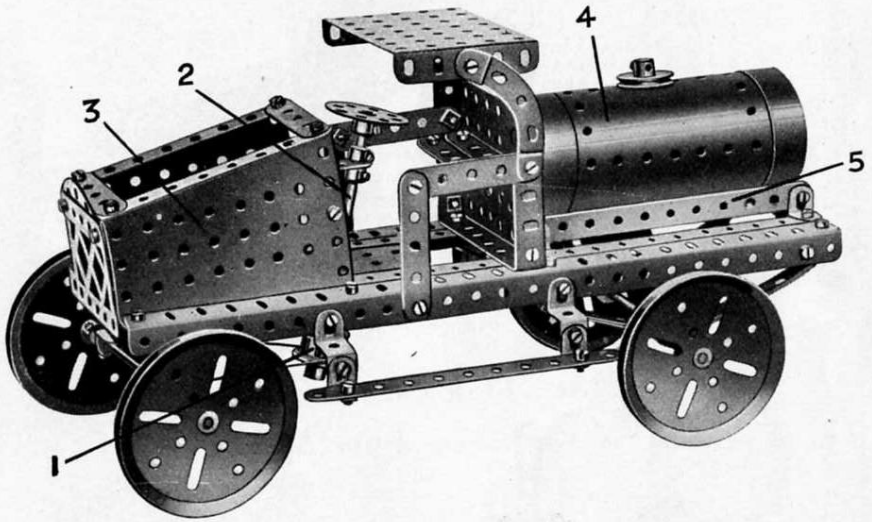
4	of No.	2	2	of No.	18A	1	of No.	53
2	" "	3	2	" "	20	4	" "	59
6	" "	5	2	" "	22A	1	" "	62
2	" "	10	4	" "	35	1	" "	63
1	" "	11	37	" "	37	2	" "	90A
4	" "	12	6	" "	37A	2	" "	111
2	" "	12A	2	" "	48A	4	" "	111C
1	" "	15	1	" "	48B	2	" "	125
2	" "	17	1	" "	52	2	" "	126A



Model No. 3.40 Tank Truck

Parts required:

2	of No.	1
7	" "	2
6	" "	3
10	" "	5
1	" "	6A
2	" "	8
2	" "	11
12	" "	12
2	" "	12A
2	" "	15
1	" "	15A
4	" "	19B
2	" "	20
1	" "	22
1	" "	24
4	" "	35
75	" "	37
3	" "	37A
4	" "	38
1	" "	48
1	" "	48A
1	" "	48B
1	" "	52
2	" "	53
2	" "	54
4	" "	59
3	" "	90A
1	" "	98
2	" "	111C
4	" "	125
2	" "	126
1	" "	162



It should be noted that the steering cord is given a complete turn around the two ¾" Flanged Wheels 1 to prevent slipping. The steering column 2 is journalled in the end of a 1½" Strip, the other end of which is bolted to a 2½"x½" Double Angle Strip secured between the two Sector Plates 3. The front road wheels are secured to a 5" Rod that is journalled in the end holes of a 3½"x½" Double Angle Strip. The ends of the steering cord are tied to this strip, which is pivoted by means of a bolt and lock-nuts (S.M. 263) to the central hole of a 1½"x½" Double Angle Strip. The latter is bolted between a pair of Trunnions attached to the underside of the 5½"x2½" Flanged Plate. The tank 4 merely rests on the 5½" Strips 5.

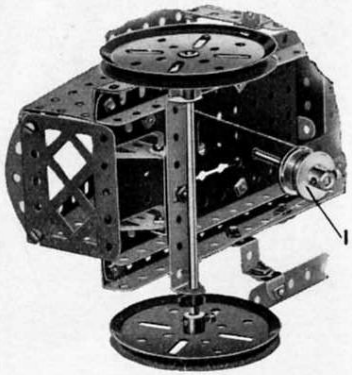
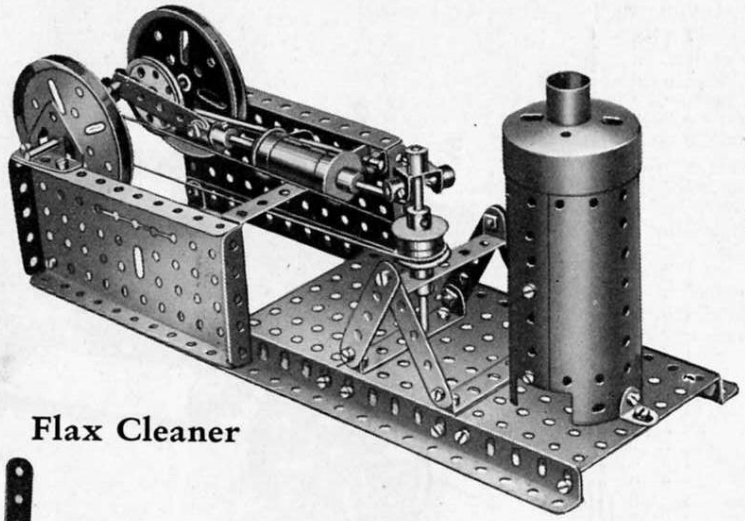


Fig. 3.40a

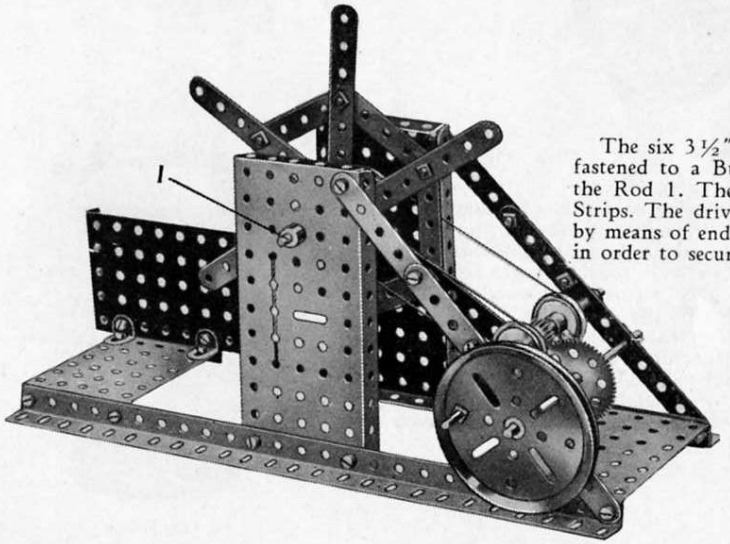
Model No. 3.41 Single Cylinder Horizontal Engine

Parts required:

5	of No.	5	1	of No.	48
2	" "	8	3	" "	48A
2	" "	12	2	" "	48B
3	" "	15	2	" "	52
1	" "	19	3	" "	53
2	" "	19B	3	" "	59
4	" "	20	1	" "	116
1	" "	21	2	" "	126
1	" "	22	1	" "	162
2	" "	35	1	" "	163
37	" "	37	1	" "	165



Model No. 3.42 Flax Cleaner



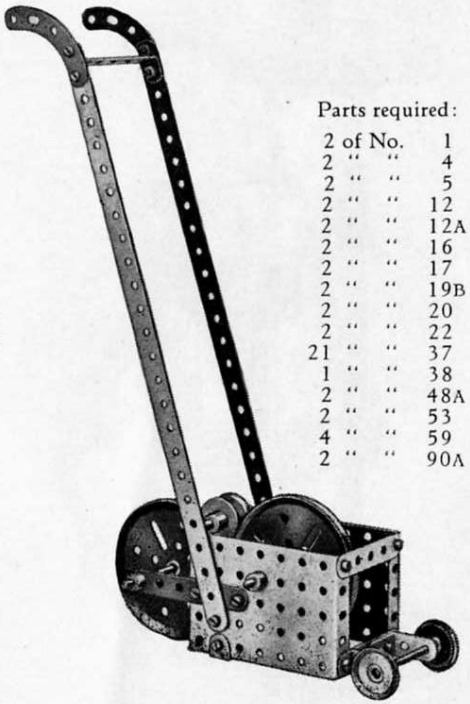
The six 3½" Strips forming the rotating frame are fastened to a Bush Wheel that in turn is attached to the Rod 1. The 3½" Strips are braced by six 2½" Strips. The drive is transmitted from Rod 2 to Rod 1 by means of endless cords. Two separate cords are used in order to secure a more positive drive.

Parts required:

4	of No.	2	1	of No.	26
6	" "	3	1	" "	27A
6	" "	5	1	" "	35
2	" "	8	34	" "	37
2	" "	12	3	" "	38
3	" "	15A	2	" "	52
1	" "	19B	3	" "	53
4	" "	22	4	" "	59
1	" "	24	1	" "	115

Model No. 3.43 Marker

The small roller, which consists of two ¾" Flanged Wheels secured to a short Rod, rests on the edges of the two 3" Pulley Wheels. In actual practice the container is filled with whitewash, in which the inner wheel is partially immersed and the mixture is transferred via the roller to the outer wheel, which does the actual marking.

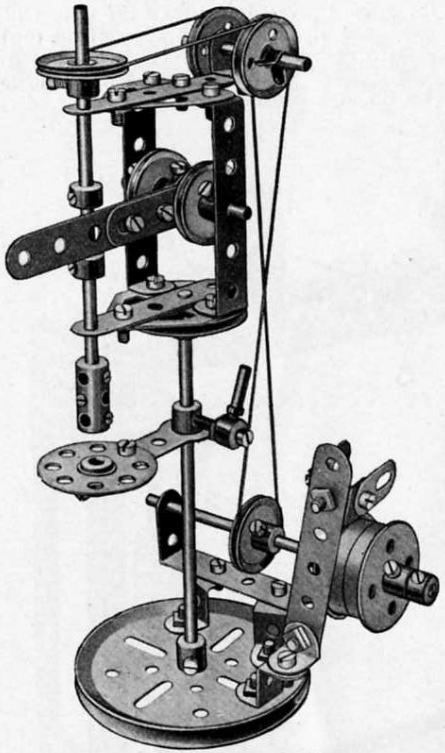


Parts required:

2	of No.	1
2	" "	4
2	" "	5
2	" "	12
2	" "	12A
2	" "	16
2	" "	17
2	" "	19B
2	" "	20
2	" "	22
21	" "	37
1	" "	38
2	" "	48A
2	" "	53
4	" "	59
2	" "	90A

Model No. 3.44

Drilling Machine



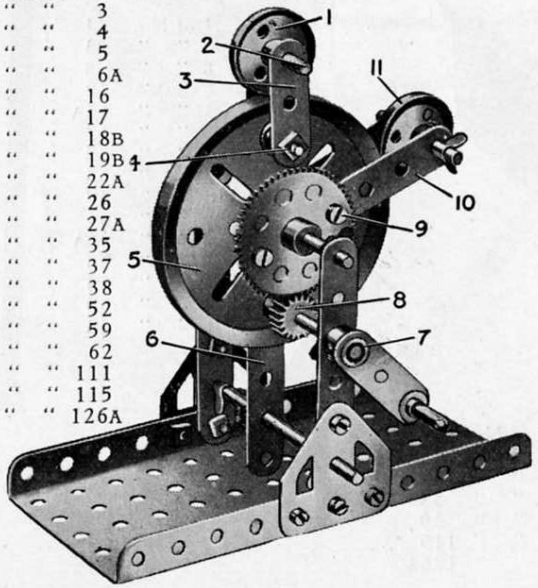
Parts required:

2	of	No.	4	2	of	No.	20	2	of	No.	48A
2	"	"	5	1	"	"	21	5	"	"	59
2	"	"	10	4	"	"	22	2	"	"	62
2	"	"	11	2	"	"	22A	1	"	"	63
1	"	"	12	1	"	"	24	1	"	"	111
1	"	"	15	2	"	"	35	1	"	"	115
2	"	"	15A	21	"	"	37	3	"	"	125
2	"	"	17	1	"	"	44	2	"	"	126A
1	"	"	19B	1	"	"	46				

Model No. 3.45 **Strip-Bending Machine**

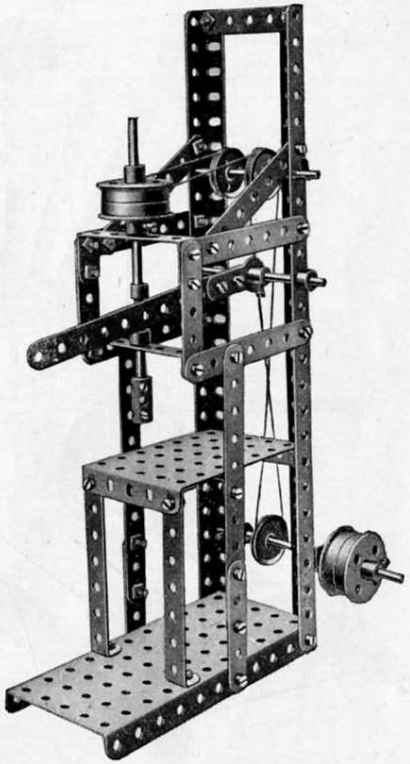
This model represents a device for bending bars or rods of metal to circular form, and may be put to practical purpose in shaping strips of tin or similar material. A loose pulley 1 is spaced by a Collar and Washers in the centre of the short Rod 2 journalled in a 1½" Strip 3. The latter is secured to the end of a ¾" Bolt 4 and spaced away from the 3" Pulley 5 by means of a number of Washers. The opposite end of the Rod is supported by a 5½" Strip 6. The handle 7 is secured to a 3½" Rod carrying a ½" Pinion 8. This engages with a 57-teeth Gear Wheel 9 mounted on another 3½" Rod which is free to revolve in the boss of the wheel 5. The Gear Wheel 9 carries a 3" Strip 10 forming one of the bearings for a short Rod carrying a second 1" loose Pulley 11. The latter is also spaced by means of a Collar and Washers so that it lies immediately above the groove of the Pulley Wheel 5. The material to be shaped is passed between the two loose Pulleys at the top of the Wheel 5, and on rotation of the handle 7 the arm 10 is caused to move downward, so forcing the object to the same curvature as the circumference of the Wheel.

1	of	No.	2
2	"	"	3
1	"	"	4
1	"	"	5
1	"	"	6A
2	"	"	16
1	"	"	17
2	"	"	18B
1	"	"	19B
2	"	"	22A
1	"	"	26
1	"	"	27A
6	"	"	35
10	"	"	37
10	"	"	38
1	"	"	52
4	"	"	59
1	"	"	62
1	"	"	111
1	"	"	115
2	"	"	126A



Model No. 3.46

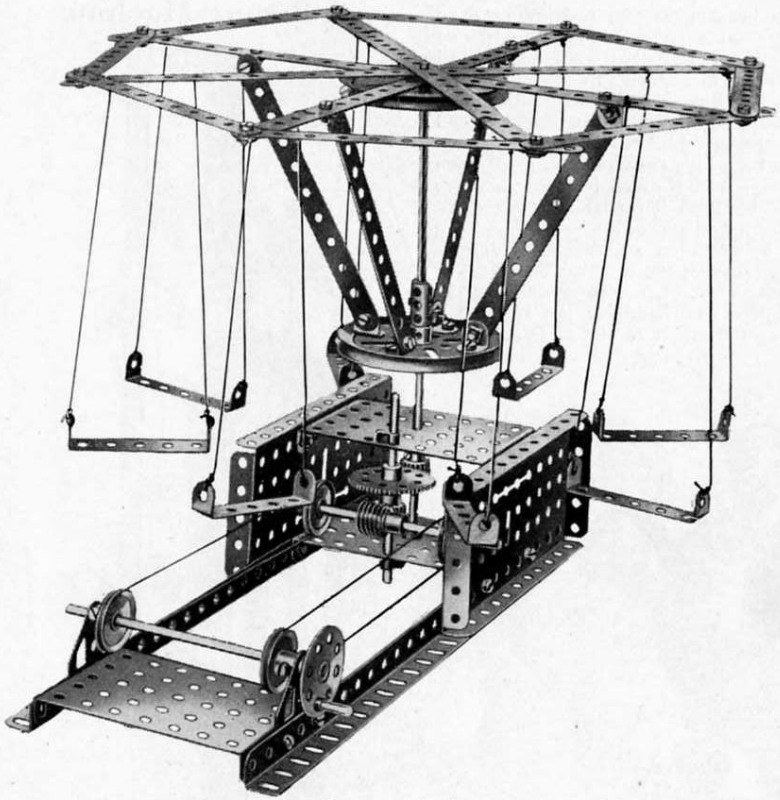
Boring Machine



Parts required:

3	of	No.	2	4	of	No.	20	2	of	No.	48B
6	"	"	3	1	"	"	22	1	"	"	52
5	"	"	5	2	"	"	22A	1	"	"	53
2	"	"	8	3	"	"	35	4	"	"	59
2	"	"	11	38	"	"	37	1	"	"	62
2	"	"	15	1	"	"	46	1	"	"	63
2	"	"	16	2	"	"	48A				

Model No. 3.47 Roundabout



Parts required:

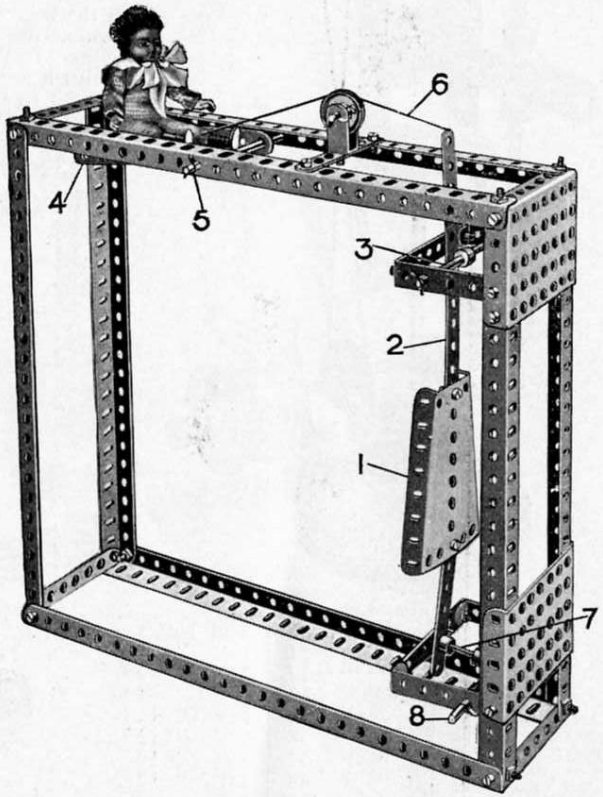
4	of	No.	1	2	of	No.	19B	36	of	No.	37
12	"	"	2	4	"	"	22	8	"	"	48A
2	"	"	8	1	"	"	24	2	"	"	52
8	"	"	12	2	"	"	26	3	"	"	53
1	"	"	15	1	"	"	27A	2	"	"	59
3	"	"	15A	1	"	"	32	1	"	"	115
1	"	"	16	2	"	"	35	2	"	"	126A

Model No. 3.48 Drop the Nigger

The Sector Plate 1 is a target, which, when hit, allows the nigger to be dropped. The Plate 1 is carried on the Strip 2 pivoted at 3, and the weight of the nigger supported on another Sector Plate 4 pivoted at 5 by means of the cord 6 keeps the lower end of the Strip 2 hard against a short Rod 7 pivoted at 8. When the target is hit and knocked back the Rod 7 is released and falls about its pivot, allowing the Sector Plate 4 with the nigger to drop.

Parts required:

1	of	No.	1
6	"	"	3
8	"	"	8
1	"	"	12
3	"	"	15A
1	"	"	17
1	"	"	22
6	"	"	35
33	"	"	37
1	"	"	44
4	"	"	48A
2	"	"	53
2	"	"	54
3	"	"	59
1	"	"	63

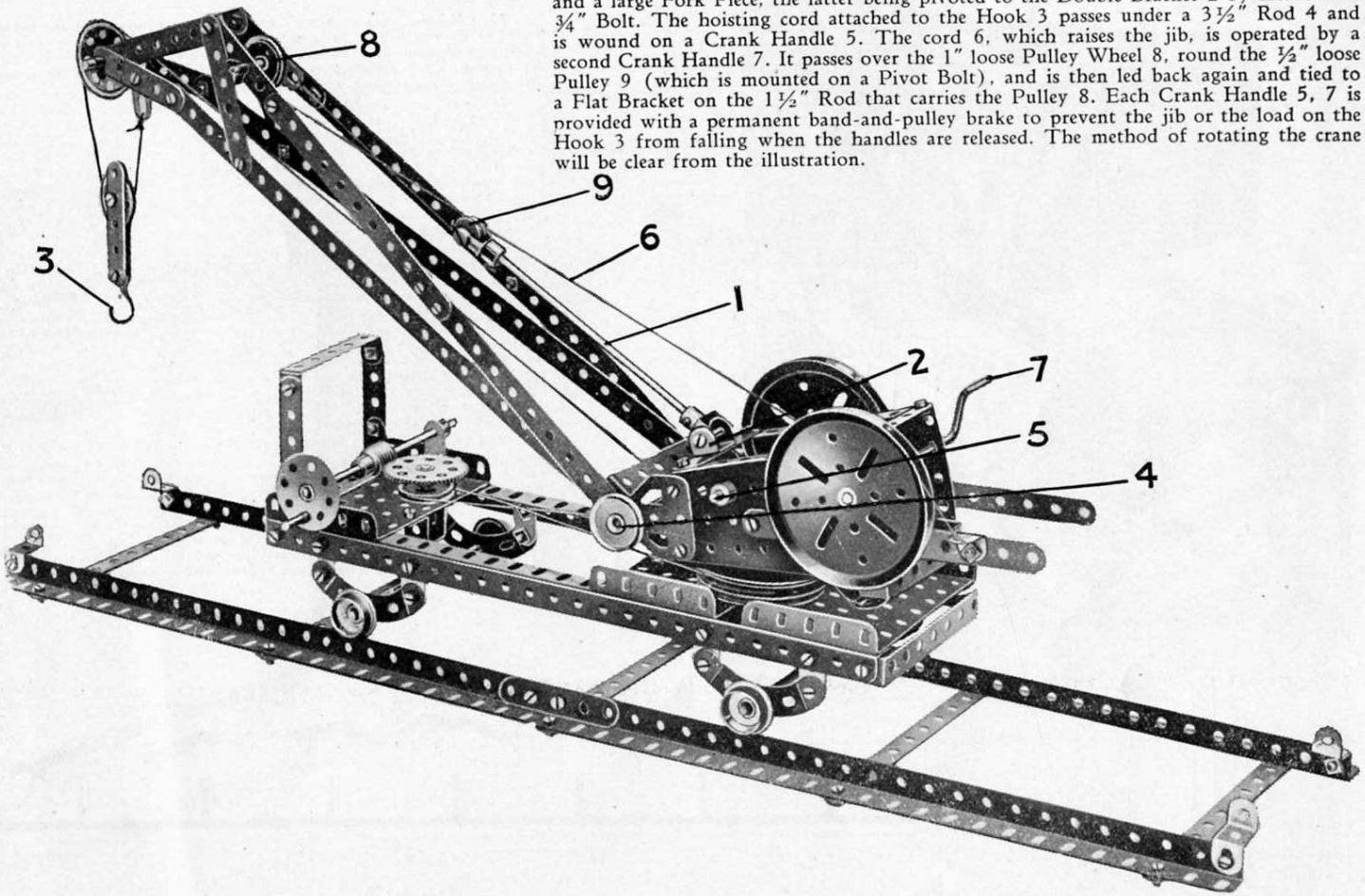


Model No. 3.49 Railway Breakdown Crane

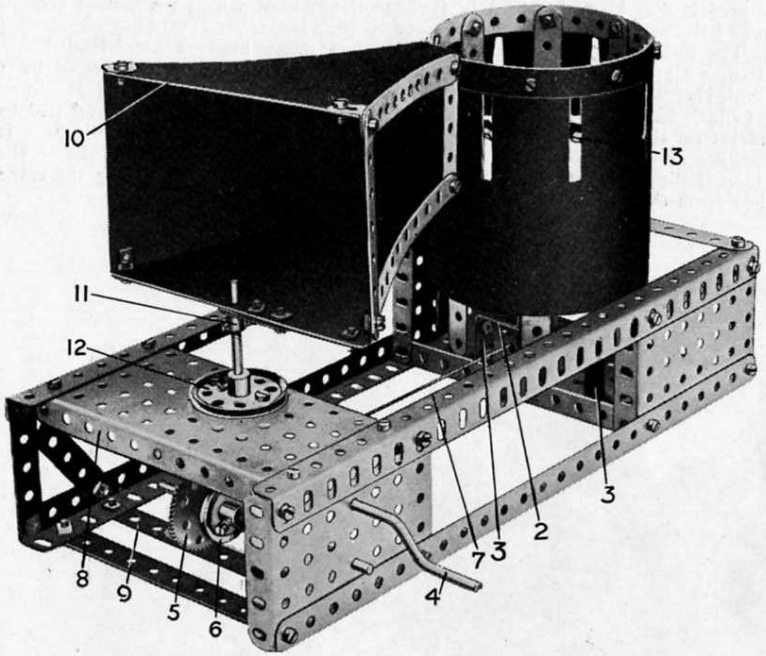
Parts required:

2	of No.	1
11	" "	2
2	" "	3
2	" "	4
12	" "	5
6	" "	8
2	" "	10
2	" "	11
3	" "	12
2	" "	12A
1	" "	15
3	" "	15A
1	" "	16
2	" "	17
2	" "	18A
1	" "	19
4	" "	19B
1	" "	19S
4	" "	20
1	" "	21
4	" "	22
2	" "	22A
1	" "	23
1	" "	24
1	" "	27A
1	" "	32
6	" "	35
84	" "	37
6	" "	37A
2	" "	38
1	" "	45
1	" "	46
3	" "	48A
2	" "	48B
3	" "	53
2	" "	54
1	" "	57
3	" "	59
4	" "	90A
1	" "	111
6	" "	111C
1	" "	115
1	" "	116
1	" "	116A
4	" "	125
2	" "	126A
1	" "	147B

The pivotal arm 1 consists of a 5" Rod, to the ends of which are secured a small and a large Fork Piece, the latter being pivoted to the Double Bracket 2 by means of a ¾" Bolt. The hoisting cord attached to the Hook 3 passes under a 3½" Rod 4 and is wound on a Crank Handle 5. The cord 6, which raises the jib, is operated by a second Crank Handle 7. It passes over the 1" loose Pulley Wheel 8, round the ½" loose Pulley 9 (which is mounted on a Pivot Bolt), and is then led back again and tied to a Flat Bracket on the 1½" Rod that carries the Pulley 8. Each Crank Handle 5, 7 is provided with a permanent band-and-pulley brake to prevent the jib or the load on the Hook 3 from falling when the handles are released. The method of rotating the crane will be clear from the illustration.



Model No. 3.50 Kinetograph



Most Meccano boys probably are aware of the principles of the Kinetograph, but for the benefit of those who have not seen one in action, we may mention that it is a device which imparts an appearance of animation to a series of pictures, each differing slightly from the other and passed in rapid succession before the eyes. In this respect it resembles the remarkable principle upon which the modern cinematograph is based.

In constructing the Meccano model the following details will prove useful:—The drum consists of a 12½" Strip bent to form a circle, with its ends overlapping one hole, and bolted to eight vertical 5½" Strips forming the sides. Two pairs of opposite 5½" Strips are connected by 3½" Strips and Angle Brackets bolted in the third holes from their lower ends. The 3½" Strips cross at right angles to one another and are bolted in the centre to a Bush Wheel, in the boss of which is secured a short Rod forming the pivot of the revolving drum. This Rod is journalled in a Double Bent Strip bolted to a 2½"x1" Double Angle Strip 2. This, in turn, is secured to the base of the model by two 1"x1" Angle Brackets 3. A further bearing for the short Rod consists of a Crank bolted in the base of the model.

The drum is rotated from the Crank Handle 4, on which is mounted a ½" Pinion engaging a 57-teeth Gear Wheel 5 secured to a 3½" Rod carrying a Pulley Wheel 6. The latter is connected by means of a cord 7 to a similar Wheel nipped to the vertical spindle of the drum. Bearings are provided for the inner ends of the Crank Handle and 3½" Rod by a Double Angle Strip bolted between the Plate 8 and 5½" Strip 9. The sighting box 10 is built up from a framework of Strips and is secured by means of a Crank 11 to a short vertical Rod rigidly mounted in the boss of the 1½" Pulley 12. The four sides of the framework 10 are covered with some black material; stiff black paper suitable for this purpose may be obtained from any stationers. The drum is enclosed in the same way, but the covering paper should be cut in a strip measuring 12½"x4½" and pierced with slots spaced 1½" apart (from centre to centre) so that they fall exactly between the upright 5½" Strips. The slots should measure 1½"x½".

The type of drawing suitable for use in this model is shown in Fig. 3.50a, and the dimensions indicated therein should be followed carefully. No doubt Meccano boys will be able to devise numerous amusing pictures of a similar kind for themselves. The strip of stout white paper carrying the sketches is inserted in the bottom of the drum, as indicated at 13. The model is now ready for operation. Placing the frame 10 over the eyes, the line of vision is directed through the narrow end, where the Strips are held apart by means of Double Brackets, and through the slots in the drum. The latter should be rotated rapidly by operating the handle 4, and as it revolves, the little dog shown in Fig. 3.50a will be seen jumping over the fence with a most realistic and amusing action.

Parts required:

1	of No.	1	2	" "	22
17	" "	2	1	" "	24
6	" "	3	1	" "	26
1	" "	4	1	" "	27A
3	" "	5	28	" "	37
4	" "	8	12	of No.	38
2	" "	11	1	" "	45
12	" "	12	1	" "	46
2	" "	12A	1	" "	48A
1	of No.	15A	2	" "	52
2	" "	16	3	" "	53
1	" "	19	4	" "	59
1	" "	21	2	" "	62

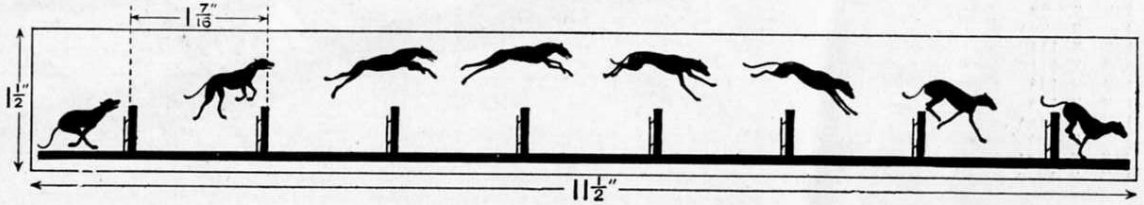
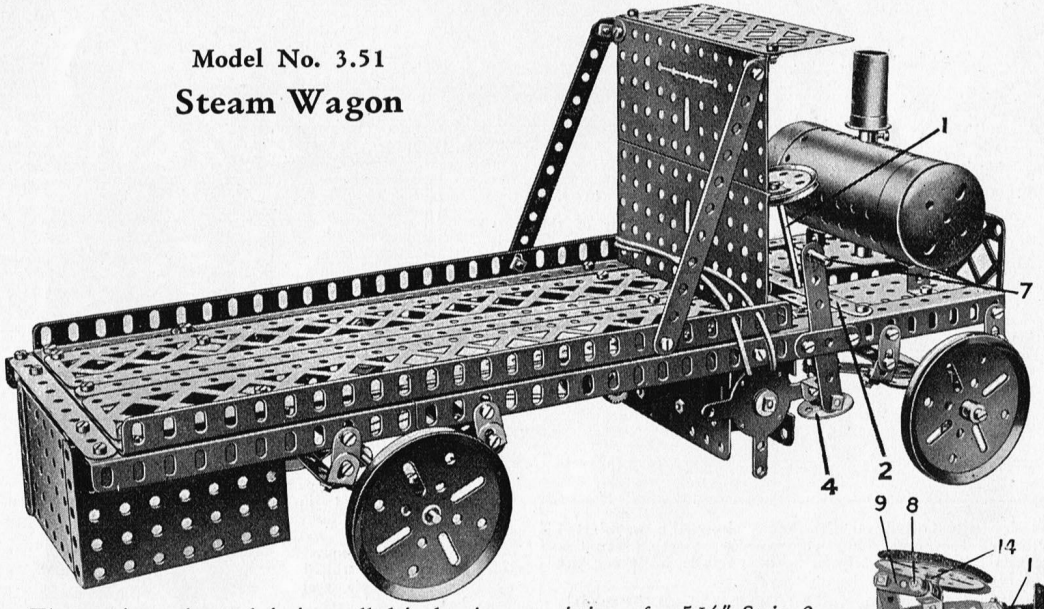


Fig. 3.50a

Model No. 3.51
Steam Wagon



Parts required:

14 of No.	2	4 of No.	19B	2 of No.	54
6 " "	3	3 " "	20	4 " "	59
6 " "	5	1 " "	21	2 " "	62
2 " "	6A	4 " "	22	1 " "	63
6 " "	8	1 " "	23	2 " "	99
8 " "	10	1 " "	24	2 " "	100
3 " "	11	1 " "	26	2 " "	111
10 " "	12	79 " "	37	1 " "	115
2 " "	12A	10 " "	38	4 " "	125
1 " "	15	2 " "	48B	1 " "	147B
3 " "	16	2 " "	52	1 " "	162
2 " "	18A	3 " "	53	1 " "	163

Electric Motor

The steering column 1 is journalled in bearings consisting of a 5½" Strip 2 and two 2½" Strips 3 (Fig. 3.51a), and carries the Bush Wheel 4, which is secured rigidly to it. A ¾" Flanged Wheel 5 supports the weight of the steering column 1. The stub axles of the front road wheels consist of ¾" Bolts, on which the road wheels are spaced by Washers 14. These bolts serve in the place of set-screws to secure two Collars to the 1" Rod 8. A pair of Cranks 9, 9a secured to the Rods 8 are joined by two 5½" Strips 15 overlapped eight holes. A 1½" Strip 10, bolted to the face of the Bush Wheel 4, is connected pivotally by a composite 4½" Strip 11 (a 3½" Strip and a 2½" Strip overlapped three holes) to the end of the Crank 9. When the steering wheel is turned, the Strip 11 moves the Cranks 9, 9a, thereby deflecting the front road wheels.

The Electric Motor 6 is controlled by raising and depressing the handle 7. Duplicate drive transmission belts 12 and 13 are used in order to secure a more dependable drive to the rear axle.

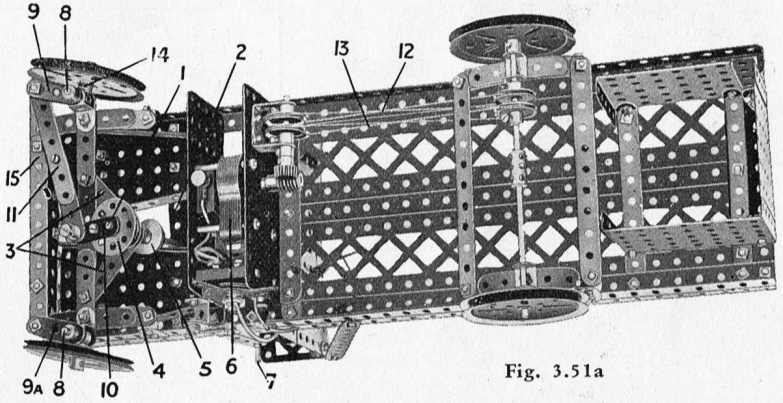


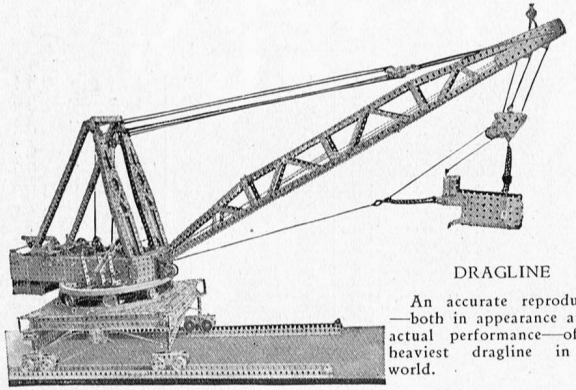
Fig. 3.51a

HOW TO CONTINUE

Do not consider that you have exhausted the possibilities of your No. 3X Meccano Outfit when you have made the 774 models here illustrated. With the experience you have gained you can now become an inventor and design entirely new models to your own ideas. If you strike trouble we will gladly place all our knowledge and experience at your disposal. Write to "Engineer Dept.," Meccano Co., Inc., Elizabeth, N. J.

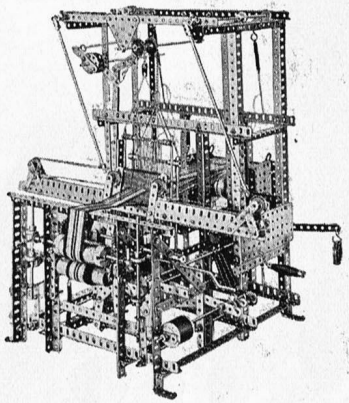
You will probably wish to make bigger and more elaborate models and you can do this either by purchasing a No. 3A Meccano Accessory Outfit or some extra Meccano separate parts. You will find all the prices at the end of this book.

A Selection of



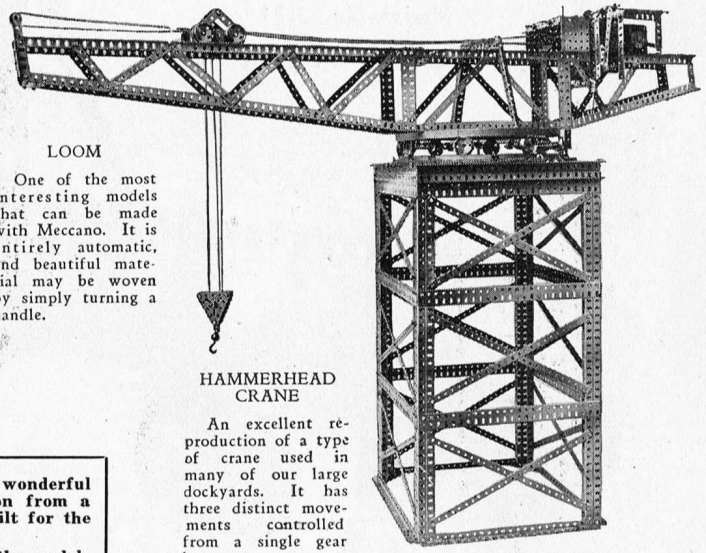
DRAGLINE

An accurate reproduction —both in appearance and in actual performance—of the heaviest dragline in the world.



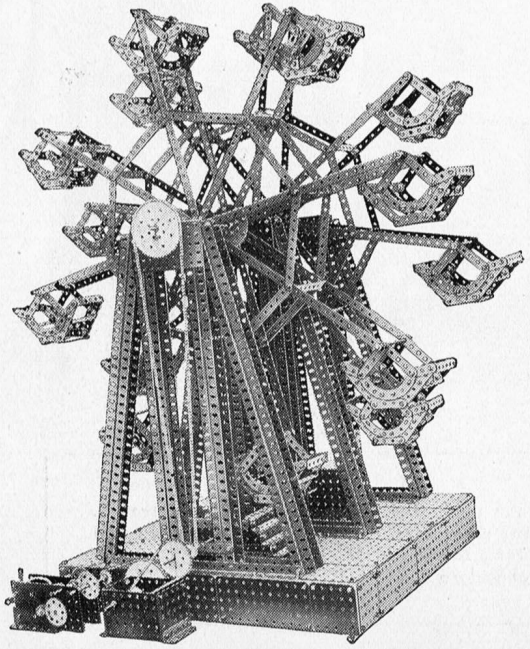
LOOM

One of the most interesting models that can be made with Meccano. It is entirely automatic, and beautiful material may be woven by simply turning a handle.



HAMMERHEAD CRANE

An excellent reproduction of a type of crane used in many of our large dockyards. It has three distinct movements controlled from a single gear box.

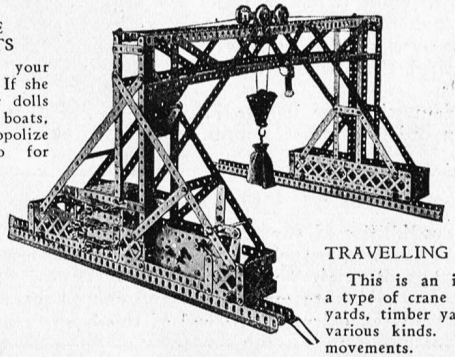


The models illustrated on this page show the wonderful possibilities of Meccano. They comprise a selection from a range of super models that have been specially built for the delight of Meccano boys.

A descriptive leaflet giving full particulars of all the models in the series and the prices of the special Instruction Leaflets that are published in connection with them, may be obtained from your dealer or direct from Meccano Co., Inc., 1004 Elizabeth Avenue, Elizabeth, New Jersey, free of charge.

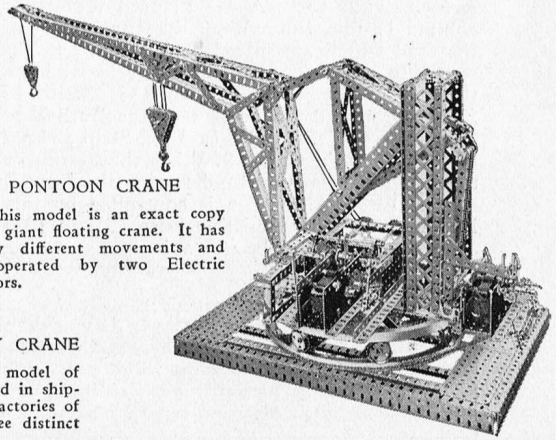
DOUBLE FLYBOATS

Don't let your sister see this! If she once gives her dolls a ride in the boats, she will monopolize your Meccano for several weeks.



TRAVELLING GANTRY CRANE

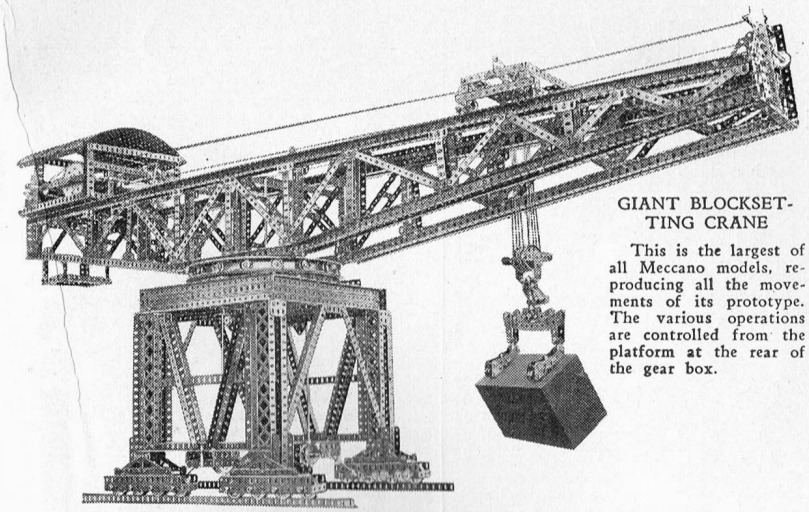
This is an interesting model of a type of crane that is used in shipyards, timber yards, and factories of various kinds. It has three distinct movements.



PONTOON CRANE

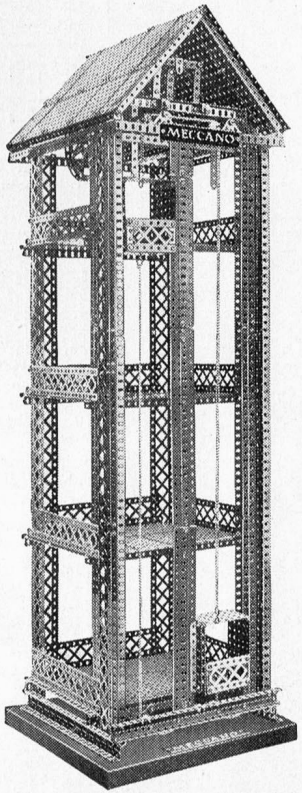
This model is an exact copy of a giant floating crane. It has many different movements and is operated by two Electric Motors.

Super Meccano Models



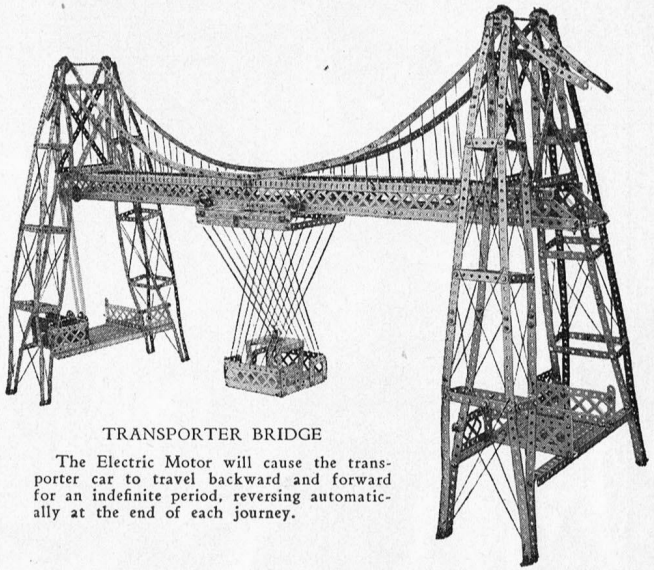
GIANT BLOCKSETTING CRANE

This is the largest of all Meccano models, reproducing all the movements of its prototype. The various operations are controlled from the platform at the rear of the gear box.



WAREHOUSE

The two lifts continue to rise and descend automatically without any attention once the mechanism is set in motion.

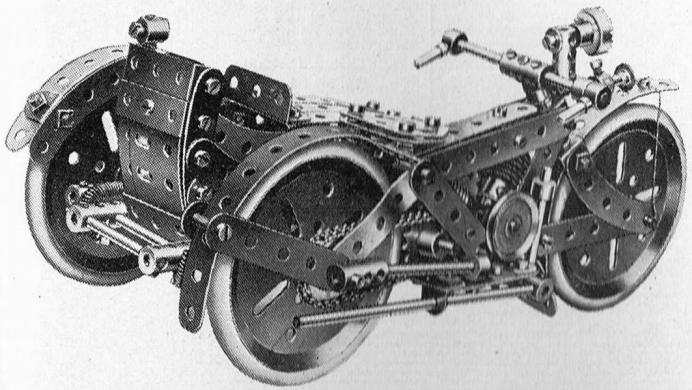


TRANSPORTER BRIDGE

The Electric Motor will cause the transporter car to travel backward and forward for an indefinite period, reversing automatically at the end of each journey.

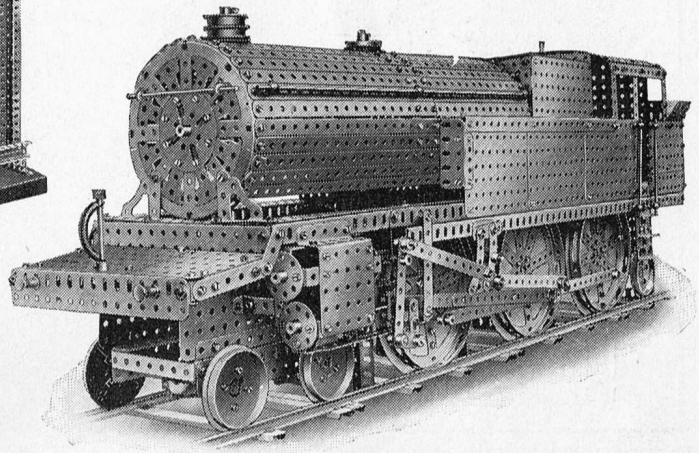
MOTORCYCLE AND SIDECAR

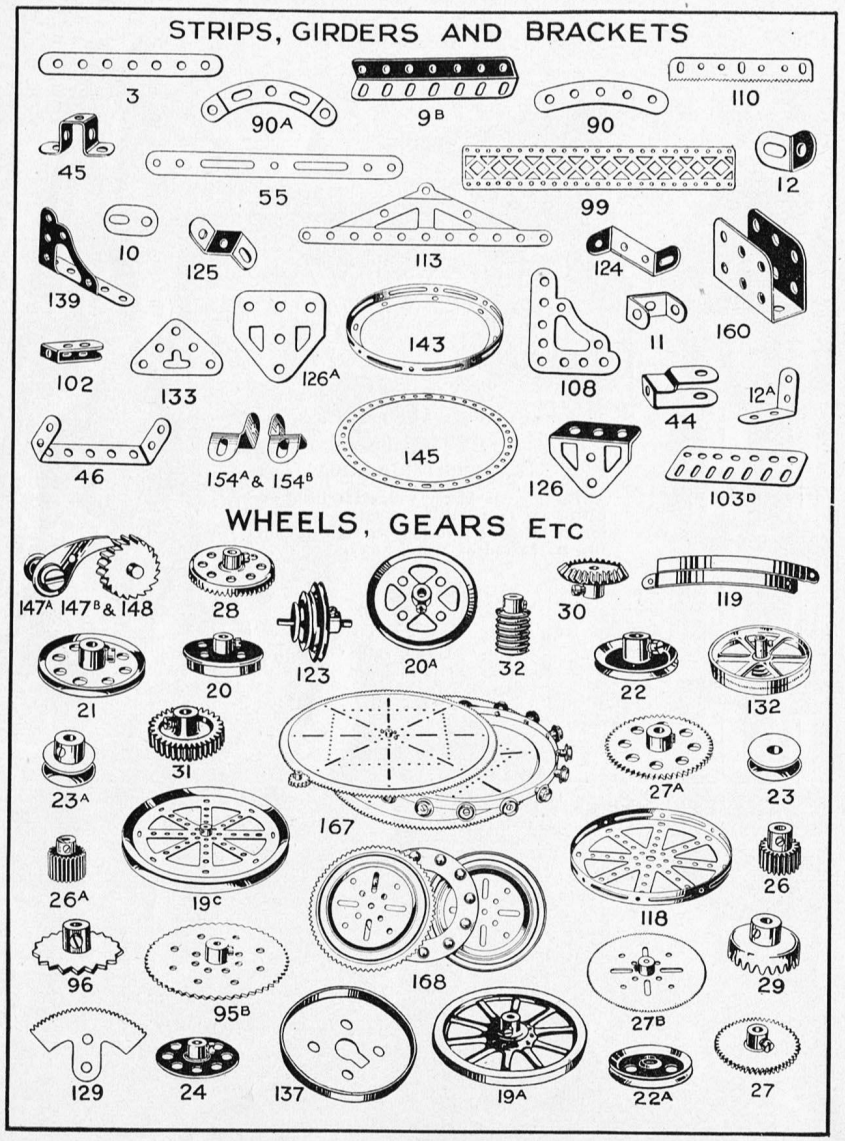
This model is an excellent example of Meccano miniature engineering, and affords a remarkable testimonial to the adaptability of the system. Its construction is a severe test of model-building skill.



4-6-2 TANK LOCOMOTIVE

This splendid tank locomotive runs under its own power, and is equipped with a working model of Walschaert's Valve gear.





Particulars and Prices

No.		$
	Perforated Strips	
1.	12½" ½ doz.	.30
1a.	9½" "	.25
1b.	7½" "	.20
2	5½" "	.15
2a.	4½" "	.10
3.	3½" ½ doz.	.10
4.	3" "	.10
5.	2½" "	.06
6.	2" "	.06
6a.	1½" "	.06
	Angle Girders	
7.	24½" each	.25
7a.	18½" "	.20
8.	12½" ½ doz.	.50
8a.	9½" "	.45
8b.	7½" "	.40
9.	5½" "	.35
9a.	4½" ½ doz.	.30
9b.	3½" "	.30
9c.	3" "	.30
9d.	2½" "	.25
9e.	2" "	.25
9f.	1½" "	.25
10.	Flat Brackets	.05
11.	Double Brackets each	.03
12.	Angle Brackets, ½"×½" dozen	.10
12a.	" " 1"× 1" ½ doz.	.15
12b.	" " 1"× ½" "	.10
	Axle Rods	
13.	11½" each	.05
13a.	8" "	.05
14.	6½" "	.04
15.	5" "	.03
15a.	4½" 2 for	.05
16.	3½" "	.04
16a.	2½" 2 for	.02
16b.	3" "	.03
17.	2" 3 for	.03
18a.	1½" "	.02
18b.	1" "	.02
19.	Crank Handles, Large each	.10
19a.	Wheels, 3" diam. with set screws "	.45
20.	Flanged Wheels, 1⅛" diam. "	.20
20b.	" " ¾" " "	.15
	Pulley Wheels	
19b.	3" dia. with centre boss and set screw "	.25
19c.	6" " " " " "	1.00
20a.	2" " " " " "	.20
21.	1½" " " " " "	.15
22.	1" " " " " "	.10
23a.	½" " " " " "	.10
22a.	1" " without " " " "	.05
23.	½" " " " " "	.05
24.	Bush Wheels "	.15
25.	Pinion Wheels, ¾" diam. "	.20
25a.	" " ¾" " double width face "	.30
26.	" " ½" " "	.15
26a.	" " ½" " double width face "	.25
	Gear Wheels	
27.	50 teeth to gear with ¾" pinion "	.20
27a.	57 " " " ½" " "	.20
27b.	133 " " " ½" " (3½" diam.) "	.65
28.	Contrate Wheels, 1½" diam. "	.30
29.	" " ¾" " "	.20
30.	Bevel Gears, ⅞", 26 teeth "	.30
30a.	" " ½", 16 " *Can only be* "	.25
30c.	" " 1½", 48 " *used together* "	.65
31.	Gear Wheels, 1", 38 "	.40
32.	Worm Wheels "	.20
34.	Spanners "	.05
34b.	Box Spanners "	.20

No.		$
35.	Spring Clips per box (doz.)	.15
36.	Screw Drivers each	.10
36a.	Screw Drivers, Extra Long "	.25
37.	Nuts and Bolts, 7/32" per box (doz.)	.15
37a.	Nuts " " "	.05
37b.	Bolts, 7/32" " " "	.10
38.	Washers " " "	.05
40.	Hanks of Cord each	.05
41.	Propeller Blades per pair	.15
43.	Springs each	.05
44.	Cranked Bent Strips "	.03
45.	Double " " "	.03
46.	Double Angle Strips, 2½"×1" ½ doz.	.20
47.	" " " 2½"×1½" "	.30
47a.	" " " 3" ×1½" "	.35
48.	" " " 1½"×½" "	.15
48a.	" " " 2½"×½" "	.15
48b.	" " " 3½"×½" "	.20
48c.	" " " 4½"×½" "	.30
48d.	" " " 5½"×½" "	.30
50a.	Eye Pieces, with boss each	.15
52.	Perforated Flanged Plates, 5½"×2½" "	.20
52a.	Flat Plates, 5½"×3½" "	.15
53.	Perforated Flanged Plates, 3½×2½" "	.15
53a.	Flat Plates, 4½"×2½" "	.12
54.	Perforated Flanged Sector Plates "	.15
55.	Perforated Strips, slotted, 5½" long "	.05
55a.	" " " 2" "	.03
56a.	Instruction Manuals, No. 00-3x "	.50
56b.	" " No. 4x-6x "	.75
56c.	" " No. 00 "	.15
56d.	Meccano Standard Mechanisms Manual "	.50
57.	Hooks "	.01
57a.	" Scientific "	.02
57b.	" Loaded "	.15
58.	Spring Cord per length	.30
59.	Collars with Set Screws each	.05
61.	Windmill Sails 4 for	.25
62.	Cranks each	.10
62a.	Threaded Cranks "	.12
62b.	Double Arm Cranks "	.10
63.	Couplings "	.15
63a.	Octagonal Couplings "	.20
63b.	Strip Couplings "	.20
63c.	Threaded Couplings "	.20
64.	Threaded Bosses "	.06
65.	Centre Forks "	.05
66.	Weights, 50 grammes "	.20
67.	" 25 grammes "	.15
68.	Woodscrews, ½" doz.	.10
69.	Set Screws "	.10
69a.	Grub Screws, 5/32" "	.10
69b.	" " 7/32" "	.10
70.	Flat Plates, 5½"×2½" each	.15
72.	" " 2½"×2½" "	.10
76.	Triangular Plates, 2½" "	.05
77.	" " 1" "	.04

# of Meccano Parts

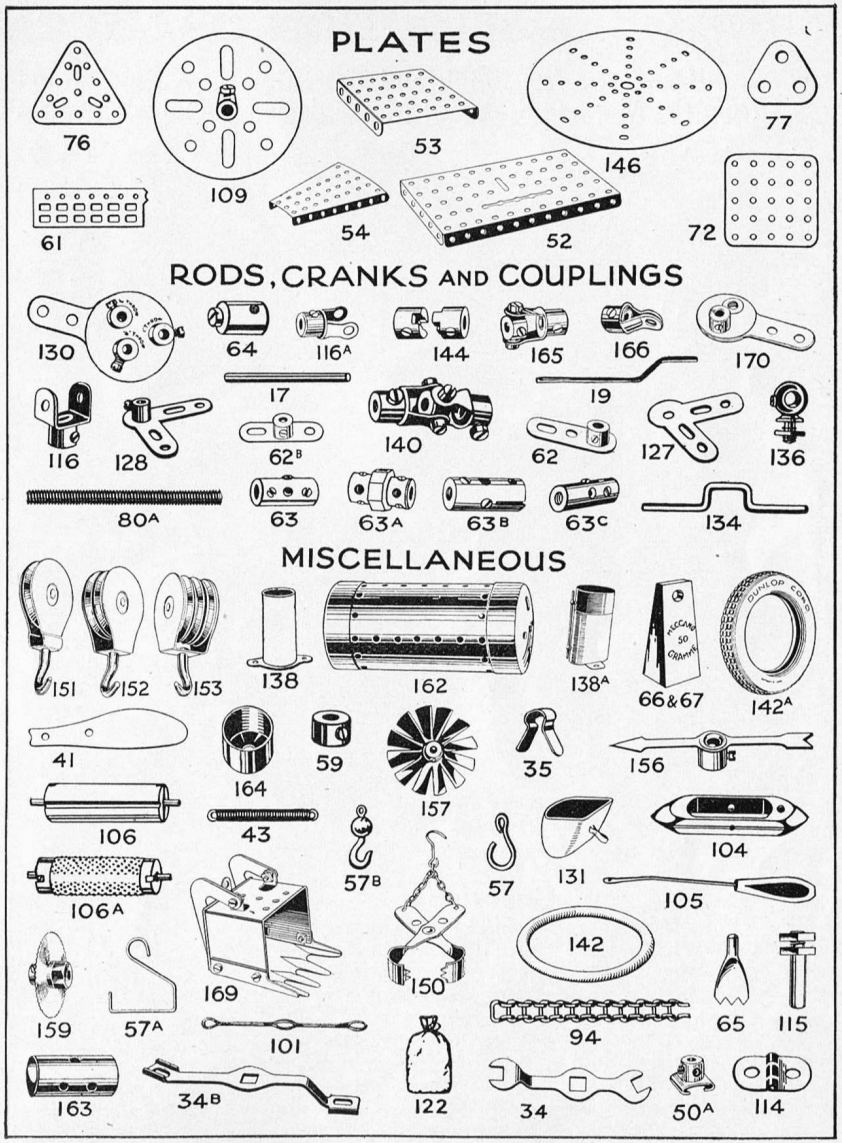
Screwed Rods

No.			$
78.	11½"	each	.25
79.	8"	"	.15
79a.	6"	"	.10
80.	5"	"	.10

No.			$
80a.	3½"	each	.05
80b.	4½"	"	.08
81.	2"	"	.03
82.	1"	"	.02

No.		$
89.	5½" Curved Strips, 10" radius	.05
89a.	3" " " cranked, 1¾" radius, 4 to circle	.05
90.	2½" " " 2⅜" radius ½ doz.	.25
90a.	2½" " " cranked, 1⅜" radius, 4 to circle	.25
94.	Sprocket Chain per 40" length	.25
95.	Sprocket Wheels, 2" diam. each	.20
95a.	" " 1½" "	.15
95b.	" " 3" "	.30
96.	" " 1" "	.10
96a.	" " ¾"	.10
97.	Braced Girders, 3½" long ½ doz.	.20
97a.	" " 3" "	.18
98.	" " 2½" "	.15
99.	" " 12½" "	.75
99a.	" " 9½" "	.60
99b.	" " 7½" "	.55
100.	" " 5½" "	.50
100a.	" " 4½" "	.35
101.	Healds, for looms doz.	.30
102.	Single Bent Strips each	.05
103.	Flat Girders, 5½" long ½ doz.	.25
103a.	" " 9½" "	.35
103b.	" " 12½" "	.40
103c.	" " 4½" "	.25
103d.	" " 3½" "	.25
103e.	" " 3" "	.20
103f.	" " 2½" "	.20
103g.	" " 2" "	.15
103h.	" " 1½" "	.15
103k.	" " 7½" "	.30
104.	Shuttles, for looms each	1.20
105.	Reed Hooks, for looms "	.10
106.	Wood Rollers "	.40
106a.	Sand Rollers "	.45
107.	Tables for Designing Machines "	.25
108.	Architraves "	.07
109.	Face Plates, 2½" diam. "	.15
110.	Rack Strips, 3½" "	.10
111.	Bolts, ¾" "	.02
111a.	" ½" 2 for	.03
111c.	" ⅜" doz.	.15
113.	Girder Frames each	.10
114.	Hinges per pair	.20
115.	Threaded Pins each	.05
116.	Fork Pieces, Large "	.10
116a.	" " Small "	.10
117.	Steel Balls, ⅜" diam. "	.02
118.	Hub Disc, 5½" diam. "	.50
119.	Channel Segments (8 to circle, 11½" diam.) "	.15
120b.	Compression Springs "	.03
122.	Miniature Loaded Sacks "	.05

No.		$
123.	Cone Pulleys each	.50
124.	Reversed Angle Brackets, 1" ½ doz.	.15
125.	" " ½" "	.10
126.	Trunnions each	.08
126a.	Flat Trunnions "	.05
127.	Simple Bell Cranks "	.05
128.	Boss Bell Cranks "	.10
129.	Rack Segments, 3" diam. "	.20
130.	Triple Throw Eccentrics "	.40
131.	Dredger Buckets "	.10
132.	Flywheels, 2¼" diam. "	.75
133.	Corner Brackets "	.05
134.	Crank Shafts, 1" stroke "	.05
135.	Theodolite Protractors "	.06
136.	Handrail Supports "	.10
137.	Wheel Flanges "	.15
138.	Ship's Funnels "	.15
138a.	" " Cunard type "	.25
139.	Flanged Brackets (right) "	.10
139a.	" " (left) "	.10
140.	Universal Couplings "	.30
141.	Wire Lines (for suspending clock weights) "	.15
142a.	Dunlop Tire, 2" 4 for	.50
142b.	" " 3" "	.75
143.	Circular Girders, 5½" diam. each	.55
144.	Dog Clutches "	.30
145.	Circular Strips, 7" diam. over all "	.50
146.	" Plates, 6" " "	.60
147a.	Pawls "	.06
147b.	Pivot Bolt with 2 nuts "	.06
148.	Ratchel Wheels "	.30
150.	Crane Grabs "	.25
151.	Pulley Blocks, Single Sheave "	.25
152.	" " Two " "	.35
153.	" " Three " "	.50
154a.	Corner Angle Brackets, ½", right hand ½ doz.	.25
154b.	Corner Angle Brackets, ½" left hand "	.25
155.	Rubber Rings, ⅜" each	.03
156.	Pointers, 2½" over all, with boss "	.15
157.	Fans, 2" diam. "	.15
159.	Circular Saws "	.50
160.	Channel Bearings, 1½"×1"×½" "	.15
162.	Boiler, complete with ends "	.50
162a.	Boiler ends "	.15
163.	Sleeve Pieces pair	.15
164.	Chimney Adaptors each	.12
165.	Swivel Bearings "	.25
166.	End " " "	.15
167.	Geared Roller Bearings "	12.50
167a.	Roller Races, geared, 192 teeth "	3.00
167b.	Ring Frames for Rollers "	2.00
167c.	Pinions for Roller Bearings, 16 teeth "	.75
168.	Ball Bearings, 4" diam. "	3.00
168a.	Ball Races, flanged "	.50
168b.	" " geared "	.75
168c.	Ball Casings, complete with balls "	1.75
169.	Digger Buckets "	.75
170.	Eccentrics, ½" throw "	.30



A SELECTION OF MECCANO STANDARD MECHANISMS

Here are a few simple and interesting movements showing how real mechanisms operate in actual practice. They are a selection from the Meccano Standard Mechanisms Manual, particulars of which are given on a previous page.

Fig. A

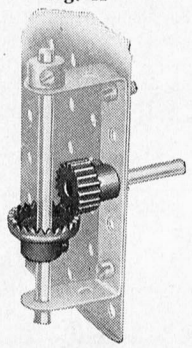


Fig. B

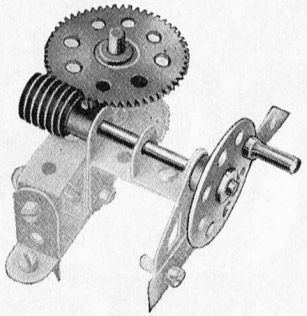


Fig. C

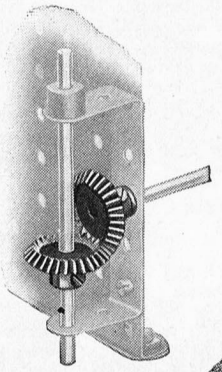


Fig. E

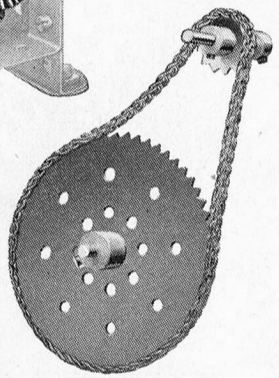


Fig. D

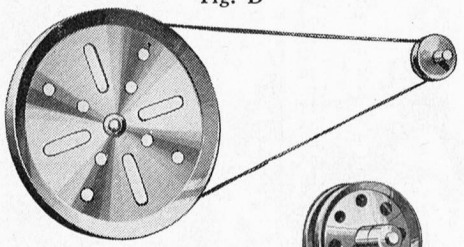


Fig. F

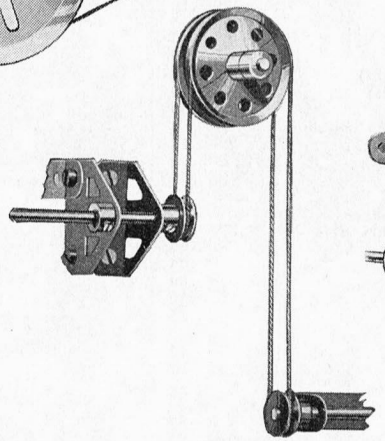


Fig. G

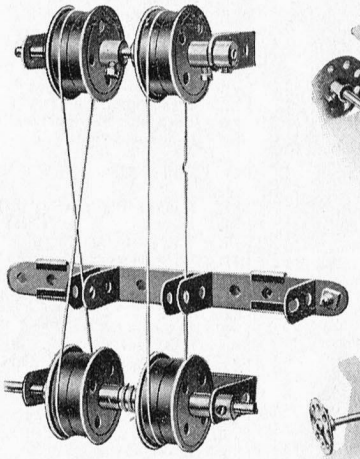


Fig. H

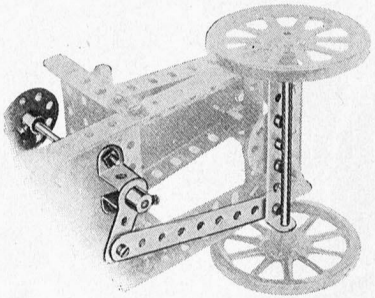
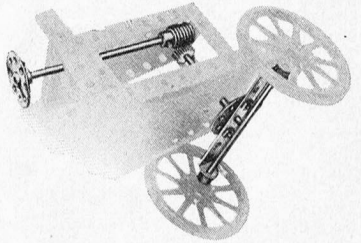


Fig. J



Gears

The Meccano system includes a wide range of Gear-Wheels, Bevel-Gears, Pinion-Wheels, Contrate-Wheels and Worm-Wheels in various sizes. All manner of interesting movements may be obtained by the use of these gear-wheels.

Fig. A shows how a vertical movement may be converted into a horizontal movement, or vice versa. Fig. B shows a Worm-Wheel engaged with a Gear-Wheel giving a very great reduction in shaft speed. Fig. C. Still a further movement is shown in this figure, using Meccano Bevel Gears.

Belt and Chain Drives

In Figs. D, E, F and G we show examples of belt and chain drives. The movements illustrated require no explanation excepting, perhaps, Fig. G which shows a simple method for slipping the belt from the fast to the loose Pulleys or vice versa.

Cords usually take the place of belts in Meccano models but miniature belting may be made from strips of canvas, india rubber, etc., in which case Flanged Wheels should be used instead of the grooved Pulleys.

Steering Gears

The various types of steering mechanism commonly in use on vehicles of all descriptions may readily be reproduced with Meccano.

Fig. H. In this case the road wheels are moved about their central pivot by means of a Crank, which is secured to the steering shaft, and a connecting Strip.

Fig. J. The road wheels in this example are secured to a central Rod, which forms a pivot, and is rotated from the hand-wheel by means of a Worm Gear.

(Continued)

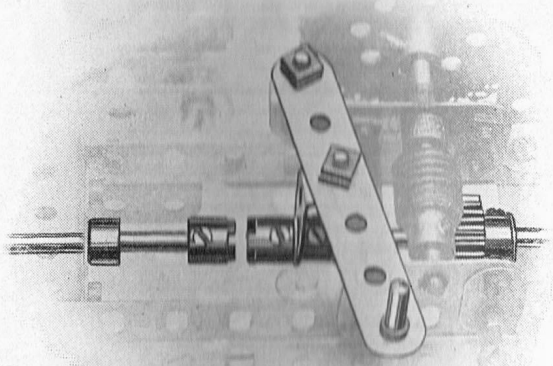


Fig. K

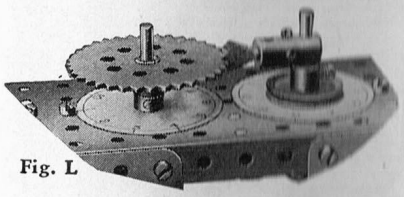


Fig. L

Dog Clutch

The Meccano Dog Clutch (Fig. K) may be used in most models where a simple clutch is required. It is also useful in the construction of drive-changing and reversing mechanisms, etc. Various kinds of clutches in addition to the Dog Clutch, may be constructed from the standard Meccano parts.

Intermittent Rotary Motion

Fig. L shows a device by means of which intermittent rotary motion may be obtained. Such an arrangement is useful in revolution counters, measuring machines, etc. In addition to mechanisms that give true intermittent motion, different types of cams, converting a regular rotary motion into a constant or intermittent reciprocating motion, are described in the S. M. Manual.

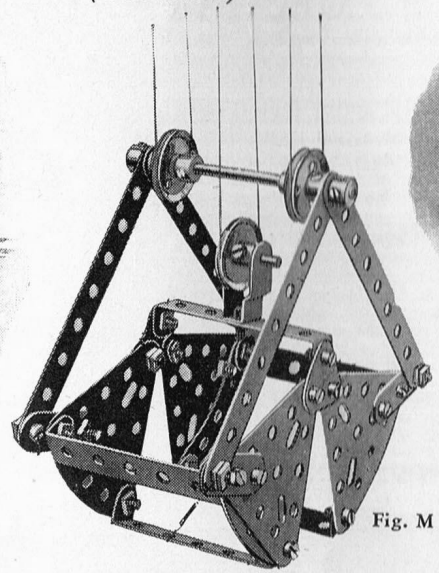


Fig. M

Grab

A typical example of the many kinds of grab that can be constructed from Meccano is shown in Fig. M. If this grab is fitted to a model crane or ship-coaler, all its movements can be controlled from an operating box built into the base of the model. The outer sides of the jaws may be filled in with cardboard and the grab can then be used to pick up loads of sand, grain, marbles, etc.

Pawl and Ratchet Wheel

Fig. N illustrates the standard Meccano Pawl and Ratchet Wheel gear, which allows the shaft carrying the Ratchet Wheel to rotate in one direction only. The advantages of such an arrangement are obvious, especially when attached to model Cranes, hoisting-tackle, etc., where the Pawl and Ratchet gear prevents falling-back of the load as it is hoisted.

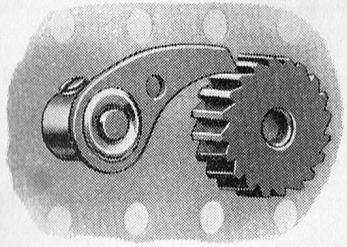


Fig. N

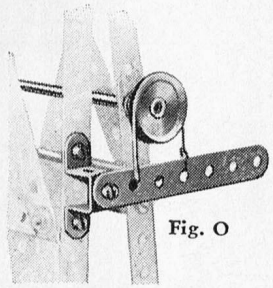


Fig. O

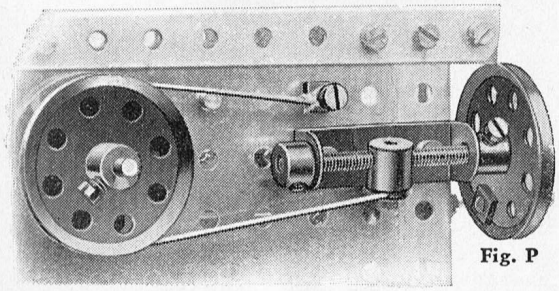


Fig. P

Strap and Lever Brake

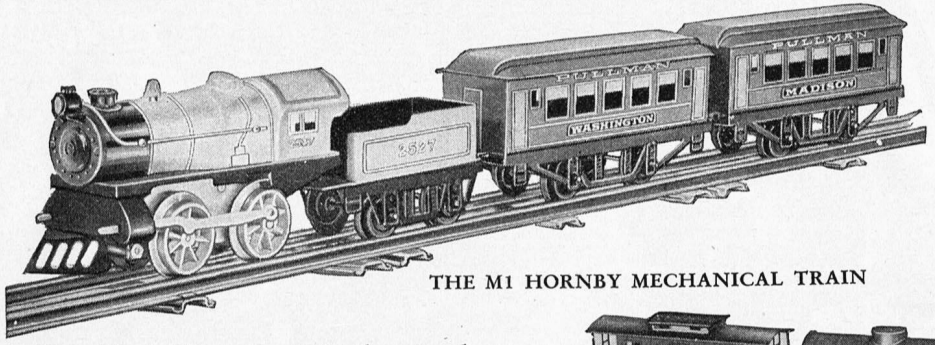
This device (Fig. O) is very useful as a quick emergency hand-brake. Although, perhaps, it is the most simple of such devices, it has also proved one of the most valuable.

Strap and Screw Brake

The type of brake shown in Fig. P is used to apply a constant retarding motion to a rotating shaft. It can thus be utilized in a crane to prevent the load from falling back when the winding spindle is stationary. One advantage of the brake is that the speed of the shaft to which it is applied can be infinitely varied, so that in some models it will take the place of a gear-changing mechanism.

HORNBY MECHANICAL TRAINS

Hornby Mechanical Trains are driven by a powerful spring motor and give a most remarkable performance. Made of pressed steel, beautifully lithographed in colors, they are practically scale models of actual up-to-date trains and are fully guaranteed by Meccano Company, Inc. You will have loads of fun running these trains with Meccano bridges, cranes, etc.



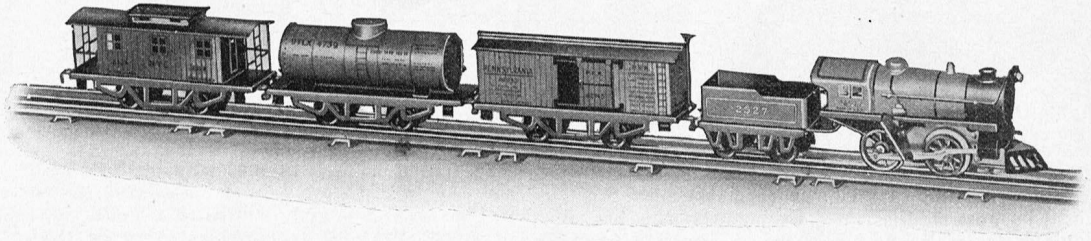
THE M1 HORNBY MECHANICAL TRAIN

The M-1 Hornby Mechanical Train

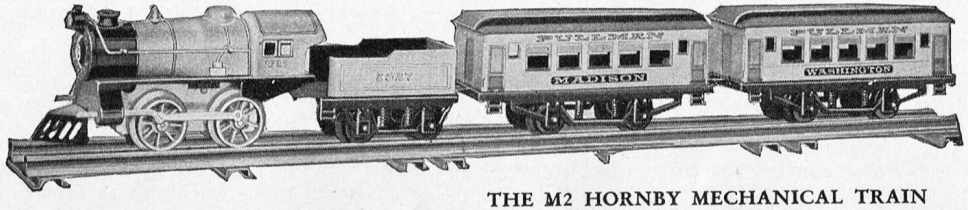
Consists of locomotive, tender and two cars, all richly lithographed in colors, with ten sections of track and necessary track connections. Locomotive is made of pressed steel with one piece boiler and cab, attains maximum speed yet holds the track under control of a finely adjusted governor; fitted with headlight, brake and brass boiler handrail. Colors: locomotive, red and black; cars, green and gold. Packed in an attractive cardboard box. Price, $3.75

The M-3 Hornby Mechanical Train

This very realistic freight train consists of locomotive, tender, box car, tank car and caboose, with 12 sections of track. Colors: box car, yellow; tank car, red; caboose, brown; in attractive cardboard carton. Price, $5.00



THE M3 HORNBY FREIGHT TRAIN



THE M2 HORNBY MECHANICAL TRAIN

The M-2 Hornby Mechanical Train

Both the M-1 and M-2 Hornby Trains are practically scale models of real trains and are beautifully finished in the same colors as those used on the B. & O. and Great Western Railroads.

All the cars are solidly made of pressed steel and the Pullmans have the new type square windows. The contents of the M-2 set are the same as M-1, but differently colored. Locomotive, green and black with gold trimming; cars, yellow and black. Price, $3.75

Meccano Price List

MECCANO OUTFITS

For convenience Meccano parts are sold in Outfits of varying size. The quality and finish of the parts are of the same high standard throughout the series. Each Outfit listed below is complete with necessary tools and illustrated instructions.

No. 0. Meccano Outfit	$1.50
No. 10. " "	3.50
No. 5. Spec. " " (with elec. motor)	5.00
No. 20. " " (" reversing elec. motor)	7.50
No. 30. " " " " " "	10.00
No. 40. " " " " " "	15.00
No. 50. " " " " " "	25.00
No. 60. " " " " " "	35.00
No. 70. " " " " " "	55.00

ACCESSORY OUTFITS

Each of the Complete Outfits may be converted into the one next larger by the purchaser of the connecting Accessory Outfit. In this way, no matter with what Outfit you commence, you can build it up by degrees until it equals the largest Outfit made.

No. 0a. (converts a No. 0 into a No. 10)	$2.00
No. 20a. (" " " 10 " " " 30) less elec. motor and rubber tires	2.50
No. 20a. (converts a No. 20 into a No. 30)	2.50
No. 30a. (" " " 30 " " " 40)	5.00
No. 40a. (" " " 40 " " " 50)	10.00
No. 50a. (" " " 50 " " " 60)	7.50
No. 60a. (" " " 60 " " " 70)	20.00

Meccano Motors and Transformer

The Meccano Motors are especially designed to operate Meccano models and are simple, strong and durable. They can be built right into the model and form a rigid part of it.

E-2 Electric Motor, reversing, with pulley and pinion $4.50 S1 Meccano Clockwork Motor, reversing $3.00

Type B Transformer for operating Meccano Electric Motors direct from the house current. Safe and convenient; has no moving parts. For 110 volts, 60 cycles alternating current only. Each $2.50.

MECCANO

Hornby's Original System, First Patented 1901

PATENTED IN THE UNITED STATES

Nov. 18, 1913	Feb. 15, 1916	Oct. 9, 1917	Dec. 14, 1920
Nov. 23, 1915	Aug. 1, 1916	Dec. 24, 1918	Apr. 11, 1922
Dec. 21, 1915	Aug. 29, 1916	Feb. 11, 1919	May 15, 1923
Jan. 4, 1916	Oct. 24, 1916	Oct. 19, 1920	Jan. 18, 1927
			Mar. 3, 1927

Design Patent July 4, 1916

PATENTED THROUGHOUT THE WORLD

Meccano is more than a Toy

IT is important to remember that when a boy is playing with MECCANO he is using engineering parts in miniature, and that these parts act in precisely the same way as do the corresponding engineering elements in actual practice. No other system of model construction can be correct, and other toys which attempt the same object by other methods must avail themselves of constructive elements which are not correct engineering elements. Consequently, though a boy may succeed in building playthings with them, they are merely toys and nothing else.

MECCANO

THE TOY THAT MADE ENGINEERING FAMOUS

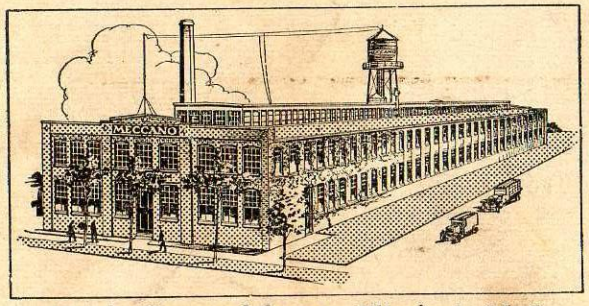
For every one boy who plays with any other construction toy a thousand play with Meccano.

These are the Meccano Factories and distributing centres.

Meccano Ltd., Liverpool
Meccano Ltd., Paris
Meccano Ltd., Toronto

Meccano Agencies:

Algiers, Amsterdam, Auckland, Barcelona, Basle, Bogota, Bombay, Brussels, Buenos Aires, Cape Town.



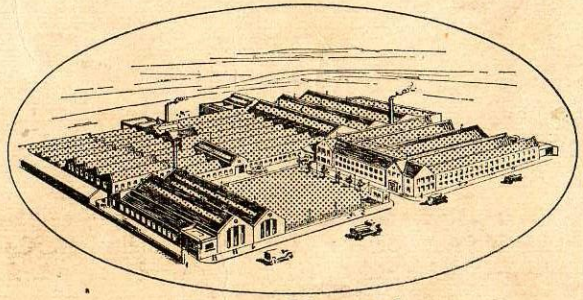
Head offices and factory, Elizabeth, N. J.

New York Showroom
200 Fifth Avenue

Meccano Agencies:

Constantinople, Durban, Genoa, Iquitos, Johannesburg, Malta, Monte Video, Oslo, Stockholm, Sydney.

London Warehouse



Factory, Liverpool

Factory—Paris

Printed in U. S. A.